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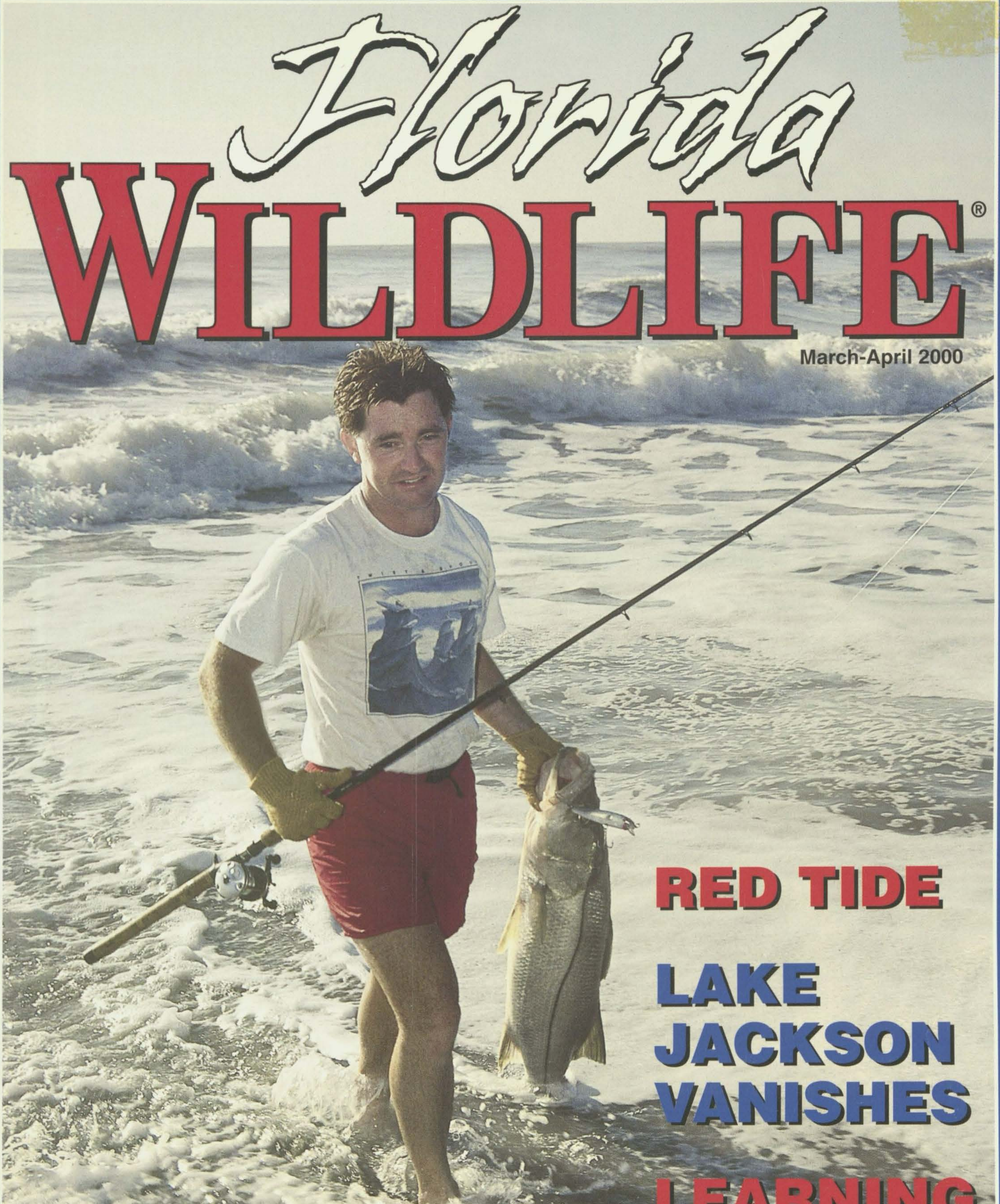
March-April 2000



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A Message From the Chairman

Every spring the Fish and Wildlife Conservation Commission's (FWC) budget comes under scrutiny as the state develops a spending plan for the next year. The legislature needs to make sure our agency uses public dollars effectively. After seven years on the commission, I am confident that our expenditures are effective and necessary to manage and protect the diverse fish and wildlife of Florida. Here are some useful ways of thinking about the FWC budget.

Between 1990 and 1998, Florida's population increased 16 percent. During this same period, boat registrations almost matched the increase in Florida population – up 15 percent. Licenses for hunting and fishing increased by 9 percent, led by a 28 percent increase in saltwater fishing licenses. Land acreage managed by the commission increased by 11 percent, to 4.6 million acres (a little less than the land area of New Jersey). A 1996 survey indicates that each year 6.7 million residents and visitors participate in wildlife-based recreation here – including viewing, fishing and hunting.

When fewer people were fishing, stocks remained high without a lot of management. But, as population increases, management of Florida's fish and wildlife becomes more complicated and costly. Degraded habitat combined with increased harvest pressure make management difficult. These days, we use many tools to ensure the long-term sustainability of recreational and commercial harvest. These include research, education, harvest monitoring, law enforcement, protection and restoration.

Last year the legislature gave us adequate resources to conduct our work. Many expected that the state would save money by creating the new commission, and the legislature hinted strongly that they would look for a FWC budget cut in 2000. I believe the success of the new agency should be measured by our performance, rather than our budget reductions. I remember painfully the tough, demoralizing years between 1994 and 1997, when the GFC eliminated 39 positions and cut its budget by $3 million.

The FWC budget ($147 million this year) is 3 one-thousandths of the FY 99-00 state budget. If you imagine the state budget as a 1000-mile round trip starting in Key West, traveling to Jacksonville, and returning, the FWC share won't even get you off the island of Key West. Less than one-third of the FWC funding comes from general revenue. More than two-thirds is derived from licenses, registrations, fees, fines, taxes and federal aid that relate to fish and wildlife. Less than 7 percent of this total is dedicated to administrative costs.

At every commission meeting, members of the public ask for increases in law enforcement, recreational opportunities, commercial harvest and wildlife protection and improvements in land management. With our talented staff, engaged constituents and continued adequate funding, the FWC can address these concerns and continue our many successful programs.

Julie K. Morris
Chairman of the
Fish and Wildlife Conservation Commission

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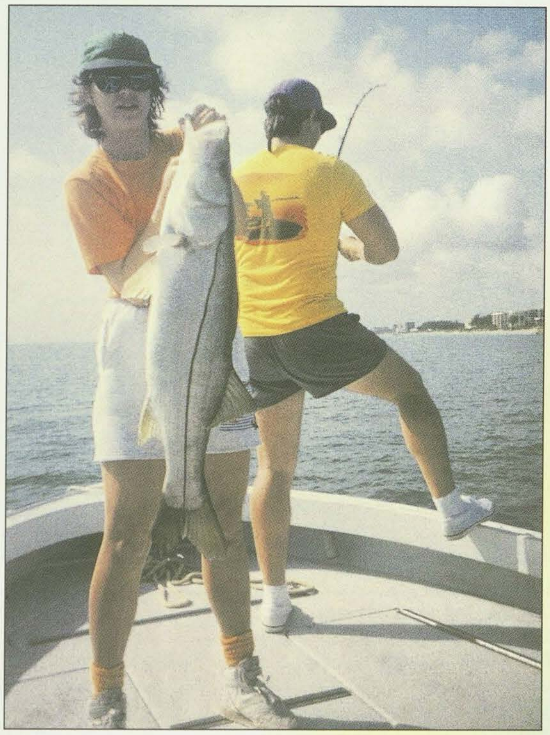

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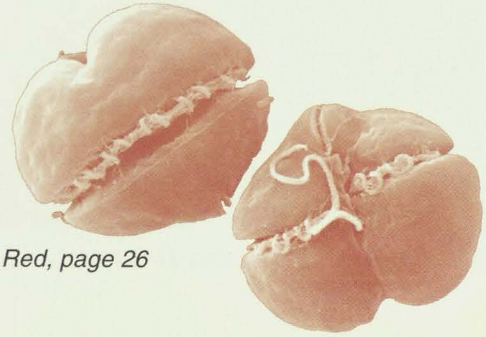

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COVER
The front cover photo features surfcasting for common snook by Marc Epstein.

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Florida Fish and Wildlife Conservation Commission
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The Fenholloway

A Search For Balance

By James Call
Photographs Courtesy of Buckeye Florida at Foley

John Crowe sighs, looks his questioner in the eye and begins to speak slowly and softly.

"Often times differences of opinion help you to improve all that you are going to do. I understand that," he said.

Crowe is the site manager of the Buckeye Florida plant along the Fenholloway River at Foley. The company and regulators have been sharing differences about the river for some time now. What once was viewed as a waterway to prosperity in the opinion of some has become a stream of death flowing to the Gulf of Mexico.

There are problems with either opinion. Whichever one is accepted will have big implications for regional job security and environmental standards. When you, so to speak, walk around this issue a lot of different things come into view. You see a company that installed all the legally required pollution controls and has never been found in violation of its permits. You see residents concerned that the company's discharge into the river contains dioxin, a carcinogen; creates low oxygen levels in the Fenholloway River and estuary; and harms aquatic life. You see 10 percent of the county's workforce earning a good living at the plant. You see government regulators trying to find a balance where the company and the river can coexist and both flourish.

The plant opened in 1954 and extracts cellulose from pine trees. Cellulose is used in the manufacture of disposable diapers, sausage casing, air filters and automobile tires among many other items most Americans use daily. Buckeye ships its products to more than 51 countries. It sends its treated wastewater to the river.

Getting the cellulose is a dirty, technically complex, water-intensive process that produces a highly colored effluent that is toxic if left untreated. In ▷

1989 the Environmental Protection Agency (EPA) labeled the Fenholloway as one of the most polluted waterways and dangerous dioxin risks in the nation. Buckeye discharges its treated wastewater about 24 miles upstream from where the river empties into the Gulf.

When the river's condition became an issue, Buckeye paid $3 million for a study, the Use Attainability Analysis (UAA), which included a plan to bring the river into compliance with state and federal water standards. Buckeye and regulators needed to solve a riddle: How to purify cellulose in an environmentally safe manner?

New technology that became available during the past 10 years has helped to make the effluent much cleaner. But there are still problems with its color and the nutrients in it.

"My frustration is that there is no technology out there," Crowe said. "I hear people talk about oxygen delignification (a process which removes lignin and wood extractives from the discharge). It's good technology. It just doesn't solve our problem."

The effluent flows through a wastewater treatment system before entering the Fenholloway.

Buckeye prides itself on being a good corporate citizen. It is an innovator in pollution control and encourages employees to be involved in the community. It pays well. The average wage of $50,000 is far above the state average of $25,641 and the national figure of $28,946. It views itself as an innovator in pollution control techniques. Many of the environmental upgrades at the Foley plant were implemented ahead of federal requirements.

"They have been responsible," said Michael McGhee, EPA's former director of water management for the Southeast. "They are reasonable to deal with and have been helpful. They want to find a solution."

The solution is where the opinions begin to differ. Company officials believed the UAA laid out a road map where the plant and river could coexist. At first the Florida Department of Environmental Protection (DEP) and EPA seemed to agree. Buckeye began implementing the plan. But then the EPA raised a series of objections that held up necessary permits.

"I think our objectives (Buckeye, EPA and DEP) are all the same. I think we just disagree on how we're going to go do that," said Crowe.

"There are concerns the discharge will not meet water quality standards in the estuary," said McGhee.

The 1994 UAA identified four problems with the plant's discharge. It contained dioxin, a carcinogen; nutrients that led to oxygen depletion; salt that altered the water's salinity; and its dark color prevented photosynthesis from occurring, harming seagrass beds in the Gulf.

Buckeye implemented process changes that eliminated dioxin-producing chlorine from the process of 97 percent of its production in 1999, added oxygen and peroxide to the purification process and lightened the color of the effluent by 50 percent in 1998. It agreed to build an underground pipeline to pump the effluent closer to the Gulf and install oxygen injectors into the discharge system to resolve the oxygen and salinity concerns.

The EPA delayed the permit based partially on information gathered before some of the in-plant changes were made. Earlier this year the EPA concluded field investigations in the Fenholloway estuary but has yet to release the findings.

"Buckeye has done a tremendous amount of reduction in color," said McGhee. "But it may still cause an adverse effect." The EPA is studying how a lighter effluent with a high nutrient level affects plant life.

The EPA wants to determine a proper balance between color and nutrients to protect sea grass beds. The coast of Florida's Big Bend is home to the largest continuous shelf of sea grass in the continental United States.

Buckeye believes that if the UAA plan is implemented, the balance will be achieved. Despite the permit delay, Buckeye proceeded with making what changes it could and documenting the impact on the Fenholloway and its estuary. A spokesperson said the company hired Florida State University professor, Dr. Robert Livingston, to study the effect in-plant changes had on seagrass beds in the Gulf; results are not final yet. A 10-mile square area at the mouth of the river is, depending on opinion, either a deadzone or less populated with seagrass. Buckeye believes early indications are that the seagrass beds are recovering. The company paid for another study by Ogden Environmental that examined EPA data on dioxin in the river sediment that concluded "the biota is safe in the areas around the Fenholloway. . ."

McGhee said dioxin in the sediment is a problematic situation that has not been resolved.

The EPA formally objected to the permit for the pipeline in March of 1998. A hearing to solicit public comment from citizens and the company is yet to be scheduled. At that hearing the EPA will explain the objections and give Buckeye and others the chance to present evidence questioning whether the objections are valid. Following the hearing the EPA will either modify, withdraw or reaffirm them. The pipeline project will move forward if the agency withdraws its objections. If the objections are reaffirmed then the state will have 30 days to propose a permit with more stringent limits.

In the meantime residents wait to see what will become of the county's main employer. Taylor County has been down this road before. Farming was the main economic activity here before the Civil War. During Reconstruction and until the Great Depression logging provided jobs for the residents. When all the large-diameter virgin pine trees were harvested the logging companies left, leaving the residents without work.

That's when an idea floated in the Florida Legislature to designate the Fenholloway as an industrial river. A bill passed in 1947 permitting the deposit of "sewage, industrial and chemical wastes and effluents or any of them," into the river. That attracted a pulp mill and its 800 jobs to a sparsely populated county; a welcomed economic boost where today 31 percent of the children live in poverty, according to Census Bureau statistics.

But environmental standards changed. President Nixon created the Environmental Protection Agency. Congress passed a Clean Water Act in 1972. The Fenholloway would have to be clean enough for people to fish and swim. The past 30 years the company, government and residents have been trying to find a balance where the mill and the environment can coexist.

"That's the kind of dilemma we're in . . .," said McGhee. "We want to quantify what . . . (is) acceptable and what affect (it) will have on the mill."

Buckeye Innovations at Foley

- **First in Florida to install an advanced wastewater treatment system. Brought on-line in 1972, it reduced the effluent's oxygen demand on the river by 93 percent**
- **First in Florida to install a stormwater run-off treatment system in 1975**
- **First in Florida to implement a comprehensive air emissions reduction plan. System on-line in 1971, four years prior to a deadline set by the Clean Air Act**
- **First in Florida to have a Best Management Plan certified by the EPA, 1999**
- **First pulp mill to collect and treat residual turpentine gases and reduce emissions, 1975**
- **First pulp mill to treat gases from black liquor evaporators and reduce emissions, 1975**
- **First to install electrostatic precipitator on a lime kiln, in 1987, to reduce particulate matter**
- **Installed an odor control system in 1975 and reduced sulfur emissions by 99 percent. System brought on-line 14 years before state regulations were implemented**
- **Joined with The Nature Conservancy to create the Big Bend Project, which Governor Bob Graham called Florida's largest and most significant coastal protection effort, 1986**
- **Substitution of chlorine dioxide for elemental chlorine results in wastewater testing non-detect for dioxin, 1990**
- **Spent $20 million in 1999 to change to a process that lightens the effluent's color and lessen its impact on seagrass beds**

Information provided by Buckeye Technologies, Inc, Memphis.

Nature Knows

By Michael Wisenbaker

On September 16, 1999, most water in Lake Jackson drained into Porter Sink at the end of Faulk Drive near my home. The sink sits some 14 feet below the normal lake level. Before swirling into the Floridan aquifer, the lake had steadily declined as this sinkhole slowly siphoned its water. Once this 4,000 acre lake on Tallahassee's northside had flushed completely into the sink, people and media swarmed to the scene like love bugs to a car's grille and recorded the event. With all the hoopla, Leon County and the Florida Department of Environmental Protection (DEP) temporarily posted the property to protect the public from harm's way.

For the past 100 years, and probably for many centuries before that, Lake Jackson's water has sated the thirst of sinkholes on the average of about once every 25 years. Nearby lakes such as Iamonia and Miccosukee also have drained into the aquifer through the years. These periodic vanishing acts occur after successive years of less than average rainfall. Natural drawdowns allow these closed basins to alternate between being a savannah, prairie and lake.

For thousands of years most natural lake basins in Florida have shifted from being dry to flooded. Plants and animals have adapted to the cycle. In fact, many species depend on such fluctuations in order to survive. Sometimes humans misread these primordial rhythms. For example, Lake Jackson purged itself in 1956. Some people rushed to build houses on its expanded shores. By the mid 1960s, however, the lake climbed to record high levels and crept halfway up the sides of their houses. When this happened, many demanded something be done to control the water level, although their houses obviously had been built within the lake's flood plain.

Keeping water levels relatively stable in lakes does not come without a price. For instance, attempts to control water levels in many of Florida's major lakes have degraded aquatic habitats. Under such conditions, thick layers of organic muck accrue, sometimes more than three feet thick, on lake bottoms. This creates a surplus of nutrients and allows an excess of plants and animals to gain footholds. To make matters worse, every year seems to bring more stormwater and agricultural runoff. As conditions worsen, the only way bodies of water can cleanse themselves is through drawdowns.

How do such changes affect fishing? During the 1960s Lake Jackson became known as one of the best trophy bass lakes in North America. Anglers from throughout the country descended upon it like frogs to a pond. They commonly snagged eight-pound bass, often landing fish weighing more than 10 pounds. By the 1970s, however, catches of big bass suffered a serious decline.

Although thirsty sinkholes consumed Lake Jackson in 1956, heavy rains deluged the Tallahassee area the following year. This marked the start of a ten-year wet cycle and the flooding of thousands of acres of dry lake bottom. This allowed aquatic plants to thrive, thus providing

Bill Burgin

Best

For the past 100 years, and probably for many centuries before that, Lake Jackson has sated the thirst of sinkholes on the average of about once every 23 years.

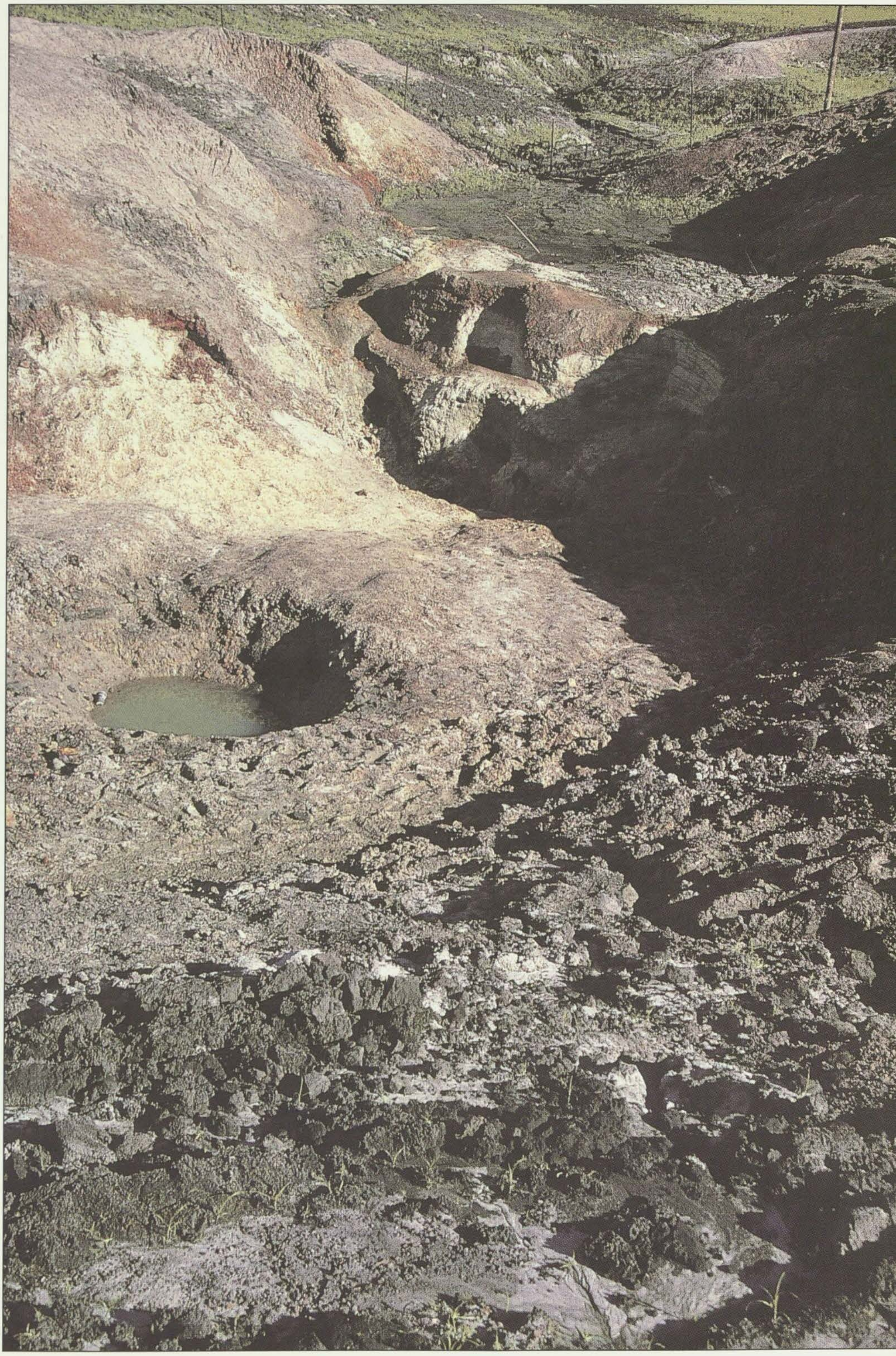
optimum habitat for fish and other creatures. As a result, the lake underwent a bass explosion that eventually created a glut of hefty lunkers.

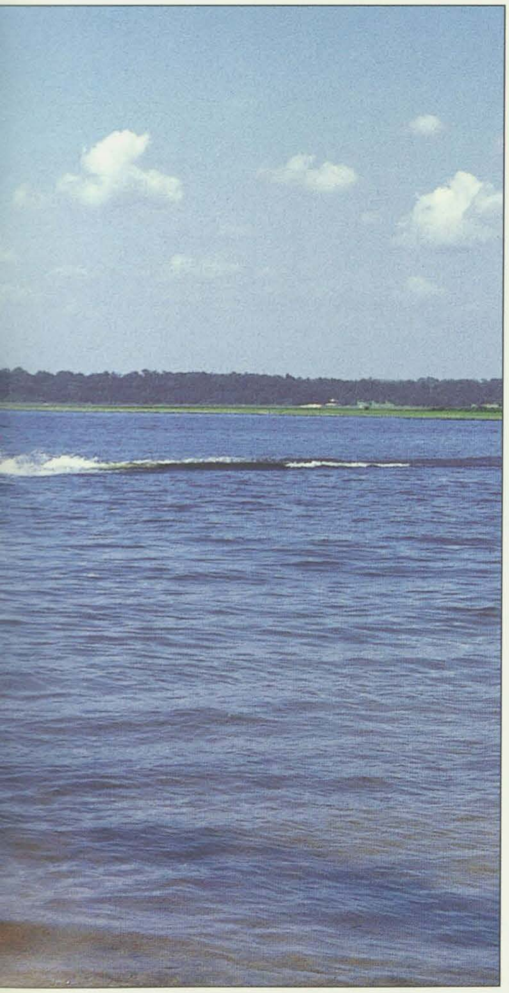
By the late 70s, however, Lake Jackson's aquatic plant communities had diminished and disappeared completely by 1981. The tell-tale organic ooze formed a mantle over most of the lake's sandy bottom. Fortunately, the lake ▷

Right: A streambed leading to the sinkhole which drained the lake.

Below: Lake Jackson at normal water level.

Michael Wisenbaker





vanished once again in the fall of 1982 allowing air and sunlight to dry the muck and convert it into sediments suited to native aquatic plants and invertebrates. When the lake replenished itself, land plants died and decomposed--enhancing the habitat for aquatic flora and fauna. For example, remains of dead plants provided cover for fingerling fish. Other small critters also clung to this decaying vegetation, furnishing even more sustenance for fish. As for the native aquatic plants, many of them had lain dormant until stimulated to grow by the returning water. These plants created nursery areas critical for the growth of young fish. Within a few years of these events, sports fishing improved tremendously.

Beyond fish, Fish and Wildlife Conservation Commission (FWC) biologist Dan Dobbins notes that lake drawdowns also benefit ducks and wading birds such as herons and egrets by supplying them with more food. Simply put, the entire ecosystem improves from these alternating wet and dry cycles.

Based on their observations at Jackson and other lakes, the FWC began using drawdowns to manage manmade lakes throughout the state. Just as with natural lakes, these water bodies accumulate too much organic muck that stifles aquatic vegetation. Without the native plants, it becomes difficult to maintain a viable population of sport fish. So the commission has conducted lake drawdowns at lakes in central Florida and at Lake Talquin, west of Lake Jackson in the Big Bend.

The drawdowns have been a resounding success and have led to prolific fish populations. Dobbins says, "Within two years after the lake's initial drawdown in 1971, sport fish abundance doubled to 244 pounds per acre in Lake Toho." Conversely, Dobbins reveals that, "While drawdowns dramatically improve sport fishing, the results are only temporary."

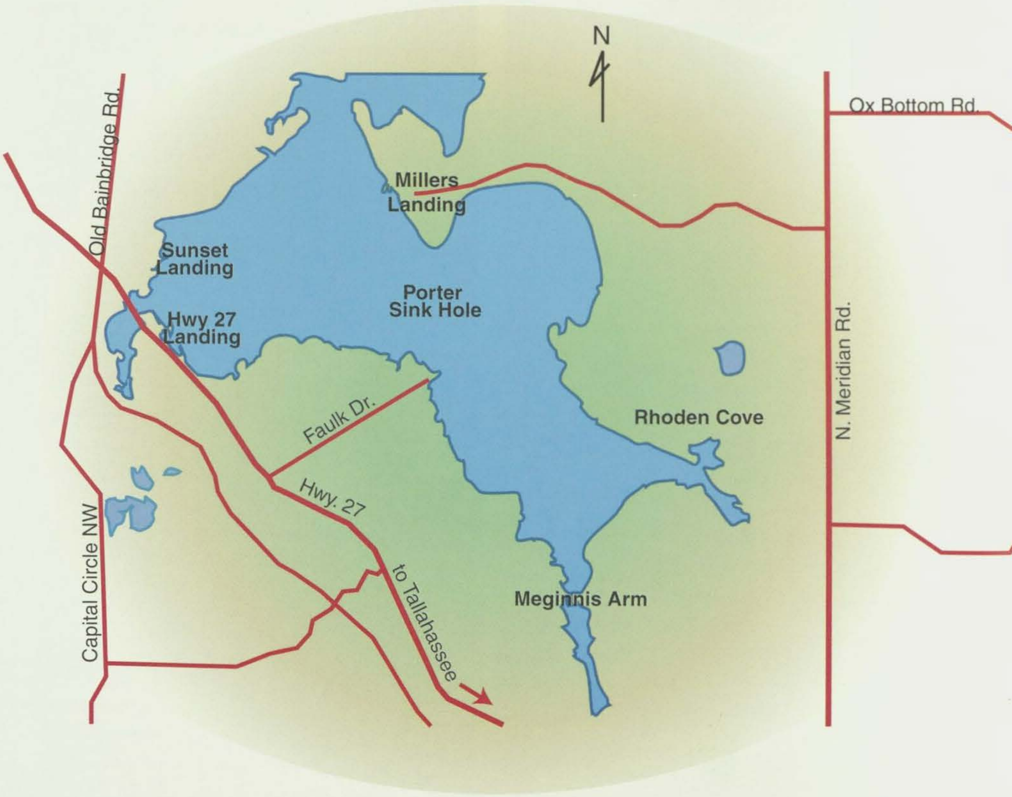
The return to a stabilized water level restarts the same sequence of events that led to a decline in the original quality of the sport fishery. Typically, improvements last for three to five years before starting to decline; therefore, drawdowns need to be conducted every five to eight years. The benefits from a natural drawdown, like the one at Lake Jackson, are far longer than from a manmade one because the systems are much more dynamic.

Another plus of the periodic droughts at Lake Jackson and other waters is weed control. For instance, in 1986 the lake suffered an infestation of the noxious and invasive hydrilla. This plant threatened to suffocate much of the lake by displacing native plants and degrading the natural ecology. This forced DEP to apply 10 treatments of the herbicide fluridone to the lake between 1987 and 1999. Most of us probably would prefer little if any herbicide in waters where we recreate. Thus, the loss of water in the lake will temporarily take care of the hydrilla problem without herbicides.

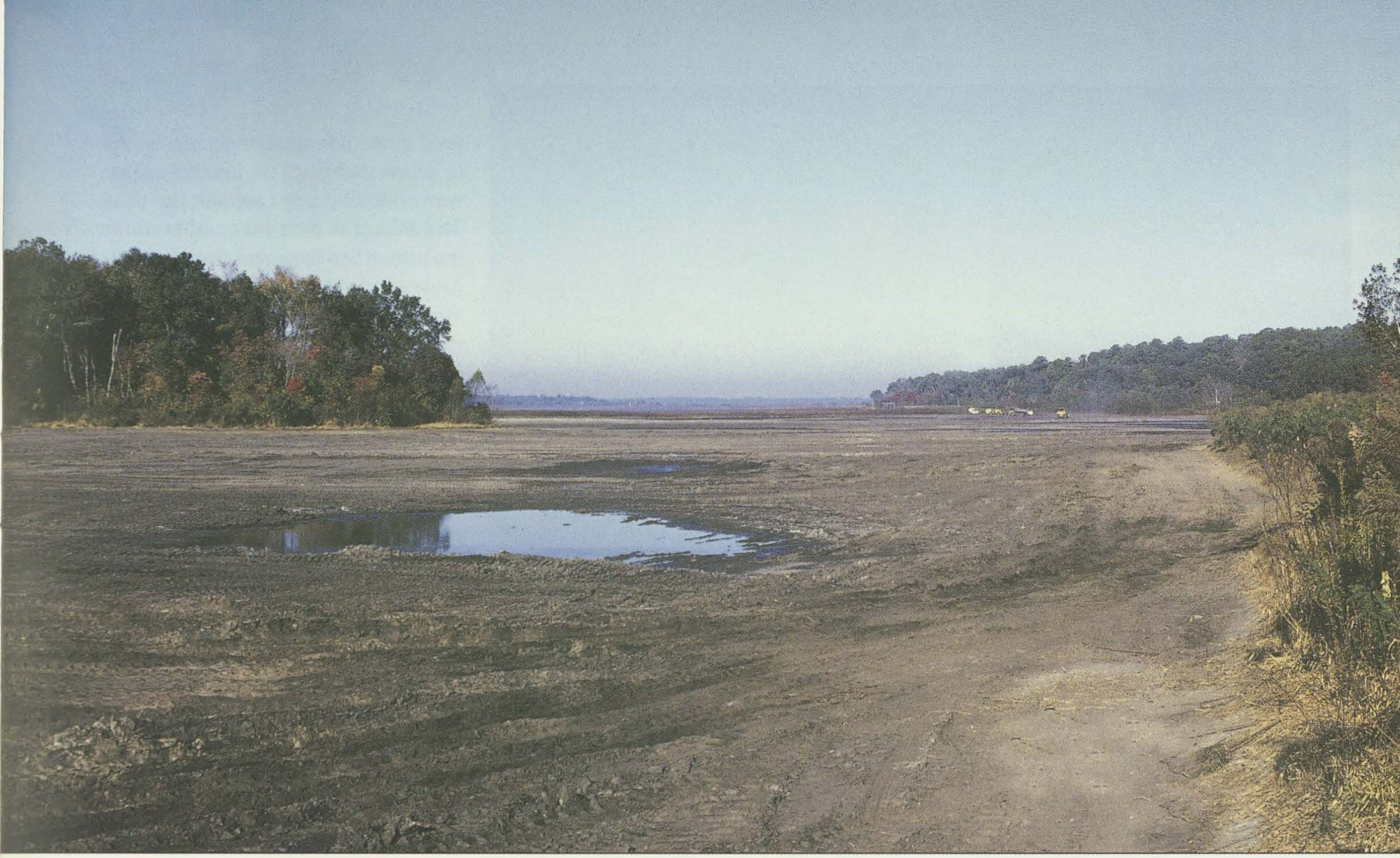
Unfortunately, Tallahassee now practically engulfs Lake Jackson's watershed, resulting in still more polluted runoff. Fishing pressure also has risen as the region continues a relentless march toward urbanization. Such circumstances are common throughout our state. Even so, the FWC continues to rank Lake Jackson as one of the state's top ten bass fishing spots.

On the basis of long-term studies by FWC biologists, we have learned that imitating nature with drawdowns of manmade lakes restores wildlife habitat and creates better conditions for fishing. As we enter a new millennium, though, much remains for us to learn. Despite major strides in science and technology, Mother Nature continues to humble us with her lessons about life.

Michael Wisenbaker is a frequent contributor to Florida Wildlife.



LAKE JACKSON
Leon County



While the Lake's Away

By James Call
Photographs by Michael Hill

It happens about every 25 years, Lake Jackson disappears.

Tom Scott wants answers. Lawson Snyder wants to clean up. Both see a window of opportunity in the aftermath of Lake Jackson's disappearance ... Scott to understand how sinkholes form and the connection between surface and ground water. Snyder to restore a premier bass fishing lake and create better conditions for fish and wildlife. Their opportunity exists only until Lake Jackson reappears.

It happens about every 25 years, Lake Jackson disappears. More than 4.4 billion gallons of water drained out of the Leon County lake leaving 3,500 acres of sand, muck and curious onlookers. A 4,000-acre lake is reduced to about one-eighth of its usual size. It is uncertain how long the lake has been performing a disappearance act.

DeSoto and his conquistadors spent the winter of 1539-40 in the region and apparently never saw a lake north of present-day Tallahassee. They described a savannah and a big plain where Lake Jackson sits today. A British trader who worked north Florida during the 1740s made no mention of the lake in his diary.

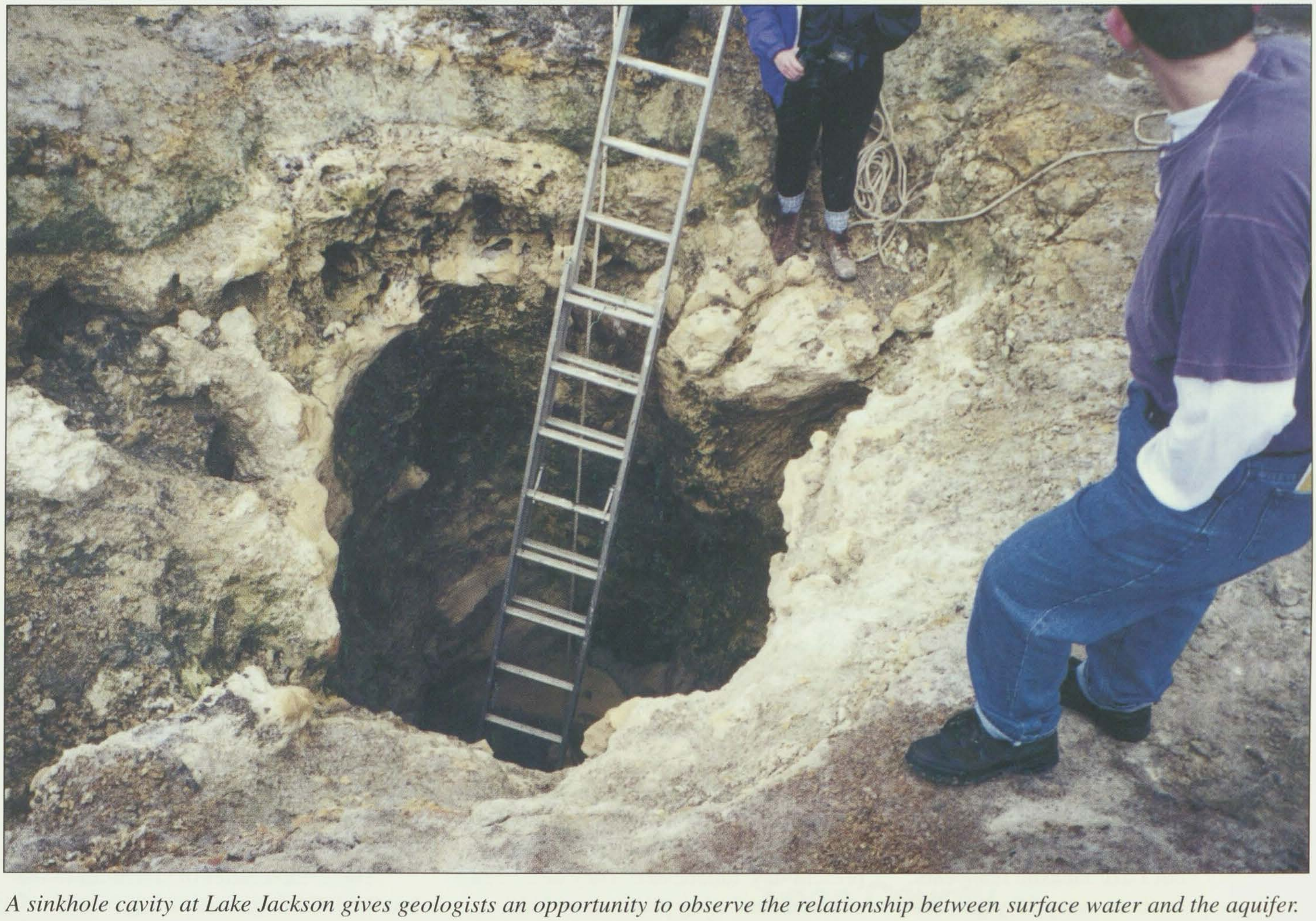
But there are written accounts of Lake Jackson draining in 1837, 1886, 1909, 1932, 1956, again in 1982 and in September of 1999. Dr. Tom Scott, the assistant state geologist for the Florida Department of Environmental Protection (DEP) wants to understand better how it happens.

There are a series of sinkholes in the lake bed. Geologists say a high water ▷

A layer of sediment has been removed from this area of Lake Jackson.

level in the lake gives a certain buoyancy to debris that plugs the sinkhole. The water pressure helps support the plug. The change in the amount of pressure on the plug when the water level drops causes it to fall out and lets the lake drain away. Eventually sediment and other material will fall into the hole, plugging it back up, and the lake slowly refills. The 12 months preceding the latest draining were dry, the annual rainfall was 26.26 inches less than the 30-year average of 73.22 inches.

Lake Jackson's bed is limestone. It is porous and water seeps in eventually dissolving it, creating fractures and sinkholes. The sinkhole that opened in September is about 10 feet from the hole that opened in 1982. The sinkhole that drained the lake in 1957 is about a mile to the northwest. The one that opened in 1932 is about 500 feet from this year's hole.



A sinkhole cavity at Lake Jackson gives geologists an opportunity to observe the relationship between surface water and the aquifer.

"The limestone is close to the surface here," said Scott. "Water dissolves it and then a cavity collapses. There are areas in the state with 500-600 feet of sand and clay over limestone. At Lake Jackson, limestone is at the land surface."

The limestone bed in the Panhandle is part of a portion that stretches through Georgia and South Carolina into Tennessee and Kentucky. The water that drains out of Lake Jackson will eventually resurface in Wakulla County, about 30 miles away, years later.

The sinkholes in the limestone bed give geologists a window to observe the relationship between surface water and the aquifer. In the lake water's absence they locate where surface rocks end and aquifer rocks begin. They get an idea where more sinkholes may occur. The information gathered may be used in deciding land-use questions. It will help to show where the aquifer is more vulnerable to pollution.

"We don't very often get to see sediments and rocks of the aquifer exposed like we see in this sinkhole," said Scott. "Florida is so flat that you don't get many chances (like this); we get a better picture of how thick the sediment beds are and to investigate very closely."

There is a short time to gather information. December to June is the traditional recharging season for the area. In 1982 the lake began to refill after four months. Once the winter rains come Lake Jackson will slowly begin to refill. Before that happens, a group of local and state agencies, the Drawdown Interagency Restoration Team, known by the acronym DIRT, is using the time to clean the lake bottom and create better conditions for fishing, hunting and wading birds.

"It's an opportunity we could not pass up," said Lawson Snyder, a bureau chief for the Florida Fish and Wildlife Conservation Commission (FWC).

"We're setting back 20-25 years of nutrient loading and restoring the water quality."

Once a world-class bass fishing spot in rural north Florida, Lake Jackson is now ringed by suburban Tallahassee. Storm water runoff from developed areas has dumped a mix of nitrogen and phosphorous (nutrients) that fueled an underwater plant explosion. The mix of undesirable plants and alga blooms, blocks sunlight and robs oxygen from the water. The rapid plant growth produces an abundance of decaying plants on the lake bottom, affecting the water quality. This creates an undesirable habitat that chases life away from the lake.

"That muck robs dissolved oxygen from the water," said Michael Hill, who is the on-site supervisor for the FWC with DIRT. "It also hinders sunfish reproduction by preventing proper bed formation.When we're through here we'll have a better spawning substrate for bass, bream and crappie."

Hill oversaw the removal of more than 191,580 cubic yards of organic material, scraped from Ford's Arm of Lake Jackson. The FWC, DEP, Leon County and the Northwest Florida Water Management District make up the DIRT project. Ideally, the group would like to scrape more than a million cubic yards of black mucky material down to the original lake bottom. That's expected to cost about $5 million. By mid-January it had removed about 400,000 cubic yards.

"There was no way to predict when it would happen ," said Snyder. The lake emptied about 7 years before planners expected.

"So we've been scrambling to rearrange our priorities and free up money. We're doing what we can to set back the impact of 20 years of development."

Snyder was successful in finding $420,000 for removing debris and muck from the lake bed.

Snyder, Scott and others are working against a natural cycle of which they can only make assumptions. Eventually rainwater will wash debris into the sinkhole and plug it back up. That could happen in a few months or a few years. When it does, the lake will slowly refill, stopping the scraping of its bed and closing a window to an underground world.

James Call is the associate editor of Florida Wildlife.

The Early History of Lake Jackson

By Mark A. Trainor

An early account of Lake Jackson draining was written by E.H. Sellards, *Some Florida Lakes and Lake Basins*, published in 1914. Sellards observed several sinks in the southern half of the lake. The largest of these is known as the "lime sink." An opening in the bottom of this sink in May 1907 caused the water to run out, draining the lake or such part of it as was connected with the sinks.

Sellards documented an indefinitely defined broad depression or sloughs extending to the southeast from the lime sink. Several water holes representing old sinks occurred along the line of this depression. In 1907 a 25-foot sink occurred along the bottom of the depression about one mile south-east of the lime sink.

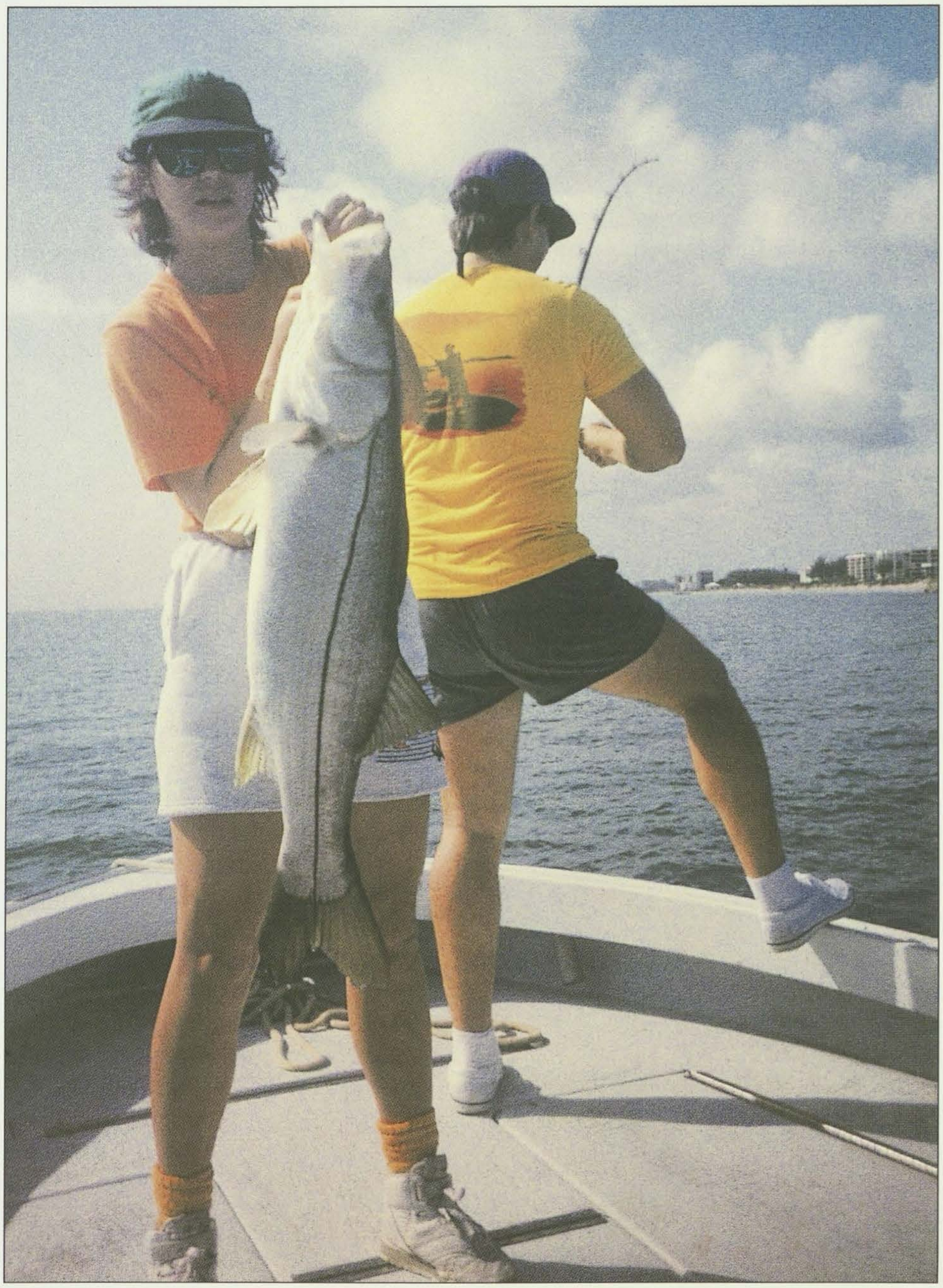
At the time the lake was low and much of the water was carried off in the course of two or three days, leaving the lake dry except for occasional water holes. When Sellards re-examined the lake in September 1909, a small open sink was found in the slough which carried away all of the water that reached it from the surrounding parts of the lake.

Sellards wrote that bottom sediments were generally gray sand darkened by organic matter. In the southern part, some muck had accumulated from aquatic vegetation. Beneath these sediments, at a depth of 1.5 to 4 feet, the sand was lighter in color and lacked organic matter. Below the light colored sand was red sandy clay.

Learning About SNOOK

The tagging study began in 1983 to gather life history information to guide management strategies about this popular fish.

Text and Photographs by Frank Morello



Bud readied his cast net as we approached the greenies and menhaden congregated near the sea wall in an eddy of the incoming tide. Bait was so plentiful that Bud's less than perfect throw "lit-up the net" – a term used by anglers when a cast net appears to come alive with a catch of numerous small fish or shrimp. Our goal was to use the live bait to catch snook for tag and release. We felt confident about today's work, now that the hard part was over and the large 50-gallon live-well was full of the snook's favorite food.

Tagging and releasing would be conducted by Bud Howard, a biologist with the the Fish and Wildlife Conservation Commission (FWC). The catching was the heavy responsibility of a volunteer snook tagging team.

We relocated the boat to the opposite side of the inlet and anchored in the "bathtub"- an area inside Jupiter Inlet that is protected from wave action and a favorite hang-out for spawning snook. We were joined by Jim Wittington, FWC Snook Research project leader on Florida's east coast. Jim's project is headquartered at the marine research facility in Tequesta. He had just returned from tagging 16 big snook near Blowing Rocks, an area on the beach north of the inlet.

Earlier in the morning, Jim and two volunteers had tagged 23 snook at Palm Beach Inlet. With the upcoming evening action, today's final tally would contribute significantly to Jim's goal of

Researchers cast for live bait to use to capture and tag snook.
Page 12: A snook can grow to 20 pounds.

marking 1,500 fish during the closed fishing season from June 1 to August 31.

For the next two hours the "work" was non-stop as the volunteers in the two boats wrestled another 32 fish to the measuring boards. Bud and Jim measured each fish and marked it with an "anchor tag" by surgically implanting it in the lower abdomen. Part of the brightly colored tag protruded from the fish and displayed the name of the agency, phone number, reward statement and a fish identification number. Examination of recaptured fish showed that the tag only caused the fish minor and temporary discomfort.

During the summer months snook on the east coast migrate to inlets and congregate in large schools for spawning. Many of the adult snook tagged in the inlet live most of their life in the river, while others come from distant locations. The tagging study began in 1983 to gather life history information to guide management strategies about this popular fish.

Movement Pattern

Snook concentrate in Jupiter and Palm Beach Inlets and along the associated beaches where biologists tag approximately 1,000 to 1,500 each year during the "closed to fishing" spawning season. Tag returns from fish caught by anglers when legal snook fishing opens in September provide information on locations where the fish live during the fall, winter and spring. The study shows that after spawning in the Palm Beach and Jupiter inlets, fish movement is away from and primarily north to Stuart, Fort Pierce and Sebastian. One was recaptured as far north as Satellite Beach, a distance of 80 miles. It seems apparent that the St. Lucie River and Indian River Lagoon systems are important habitats in the snook's life cycle.

Several snook Jim tagged as juveniles in these systems were later recaptured as adults in the Jupiter Inlet, where they had traveled south to spawn. There is a minor movement to the south of post-spawning fish, as some tagged fish were reported caught in the upper Keys. Jim explained that the movement south could be the result of snook following the fall "southerly" migration of mullet. The mullet provide a food source for snook and other large predatory fish such as tarpon and jack crevalle.

Age and Size

Jim obtains additional information from fish carcasses donated by anglers. He determines the age of fish by interpreting growth rings formed on a bone from the inner-ear called "otolith." One ring is deposited for each year of growth. Jim notes that female snook reach sexual maturity at age 4 or 5, and have obtained a fork length (from snout tip to fork of tail fin) of approximately 25-26 inches. Sizes range to 39 inches, which are fish with an approximate age of 8 or 9 years. Male snook reach sexual maturity earlier than females - at age 2 or 3, at which time they measure approximately 18 inches at the fork of the tail. Male snook do not grow quite ▷

as large as females, obtaining a maximum length of 30-35 inches. Adult snook usually weigh between 10 and 20 pounds. The majority of brood fish at the study sites are 4 to 7 years of age. Fourteen years is the top line for very old snook, although Jim determined one fish to be 21.

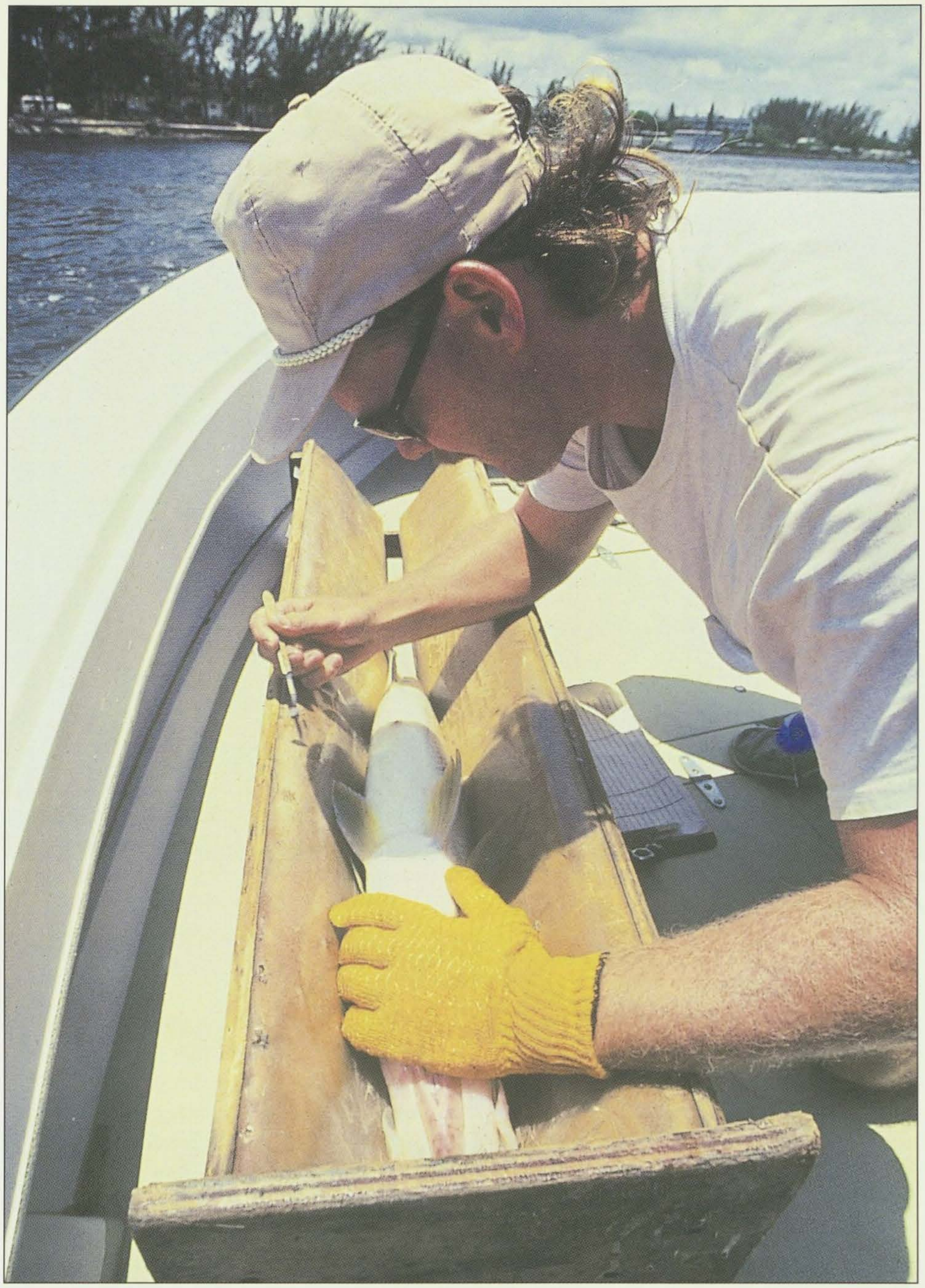
Population Estimates

Jim applies statistical analysis to the tagging data to estimate population and detect trends. From this data he can speculate on the status or "well-being" of the species. Jim estimates yearly the number of brood fish migrating to the study area. There were increasing numbers from 1985 to 1987, since then the figure has stabilized at the present estimate of 20,000 fish.

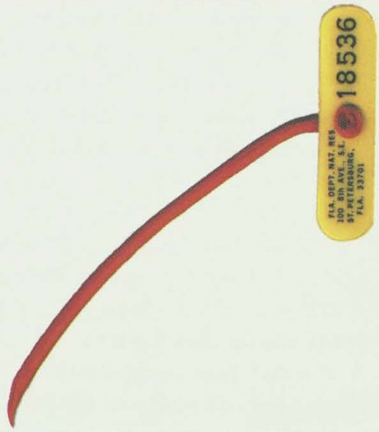
The snook tagging program is funded by state saltwater fishing license revenues and Federal Sportfish Restoration Funds generated by a user fee on fishing equipment and motor boat fuel.

A snook T-Shirt is offered as a reward for each tag number returned along with information on location of catch, date, weight and measurements of fish. The angler will also receive a letter providing all previously recorded information on the fish.

Frank Morello is an FWC freshwater fish administrator.



Tagging causes minor and temporary discomfort for a snook.



A snook T-shirt is offered as a reward for each tag number returned along with information on location of catch, date, weight and measurements of fish.

Free Fishing Days April 1-2

The Fish & Wildlife Conservation Commission invites you to fish for free. Everyone may fish any public freshwater lake or river in Florida without a fishing license on April 1 and 2. All other fishing laws and regulations will remain in effect. Introduce a friend to Florida fishing. Open to all ages.

The Everglades Youth Conservation Camp

The Florida Fish and Wildlife Conservation Commission's Everglades Youth Conservation Camp has offered summer adventures since 1965. The rustic Everglades Youth Conservation Camp, located in the J.W. Corbett Wildlife Management Area, is 20 miles west of West Palm Beach. Your child can enjoy a back-to-nature experience in the wilderness. Children ages 8 through 14 may register for a one-week camp session, which runs from Sunday through Friday. Registration is $200 per child and includes all camp fees, including meals, lodging and materials.

The mission is to foster awareness, appreciation and concern for Florida's wildlife and environment through outdoor recreation and education activities. All programs focus on wildlife and habitat issues unique to south Florida and are designed to increase the camper's knowledge and appreciation of wildlife. Campers learn about ethical, environmental behavior. In addition to our wildlife-based educational programs, all campers participate in swimming, canoeing, fishing, archery and nature hikes. Evening programs include wildlife presentations, campfire, night hikes and much more.

Nature Seekers (ages 8-9) experience the wonders of nature through hikes, nature games and arts and crafts. Campers are introduced to south Florida's environment and wildlife through fun and engaging activities.

Wildlife Adventurers (ages 10-11) learn about south Florida plants and animals, habitat protection and wildlife management principles.

Explorers (ages 12-14) "voyage" into the wilderness for one to two nights of primitive camping. Campers learn the fundamentals of wilderness survival, orienteering, backpacking and campsite preparation.

Wildlife Conservation and Firearm Safety (ages 12-14) campers are introduced to South Florida ecology, wildlife identification, the fundamentals of wildlife management, orienteering and wilderness survival. This program includes range time and extensive instruction in firearm safety. The session meets the requirements of Florida's Hunter Education program.

Mariners (ages 13-14) are introduced to marine ecology, fish identification and marine habitats. Campers experience a canoe and kayak trip along with snorkeling and overnight camping experience.

For a brochure/registration form contact Tricia Roberts at (850) 488-8083 or e-mail **robertt@gfc.state.fl.us** or call Janice Kerber at (561) 624-6929. For more information visit the Florida Fish and Wildlife Conservation Commission's website at **http://www.state.fl.us/fwc**. Go to "Activities For You" and click on youth camp.

Frank Adams

HONORABLE MENTION: IBIS ON THE BEACH by Jean Becker, Venice

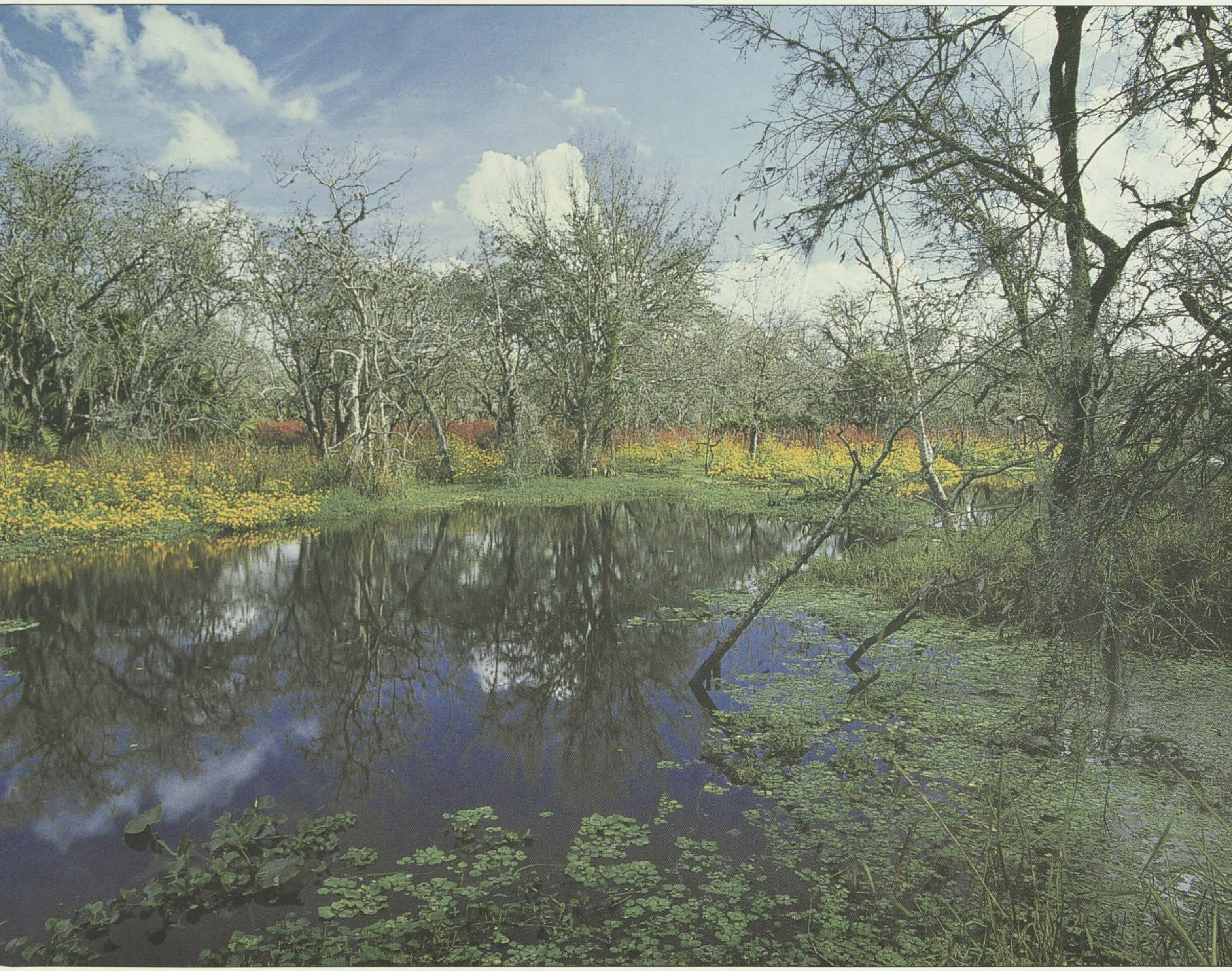
HONORABLE MENTION: CYPRESS KNEES by Don Mammoser, Littleton, Colorado

1999 Photo Contest

Winning Environment

Congratulations to the eight winning natural environment photographers. Their 1999 winning *Florida Wildlife* photographs are published here for the first time. The diversity of natural Florida is illustrated by the scenes of the coast, inland lakes, cypress and dunes.

The 2000 *Florida Wildlife* photo contest deadline is June 16. See page 18 for entry information.



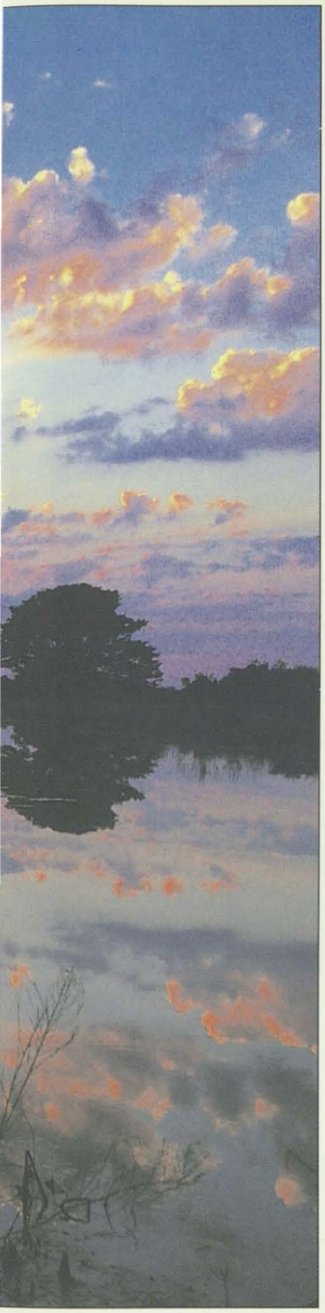
***FIRST PLACE**: THREE LAKES by Mark Schroeder, Largo* ▷

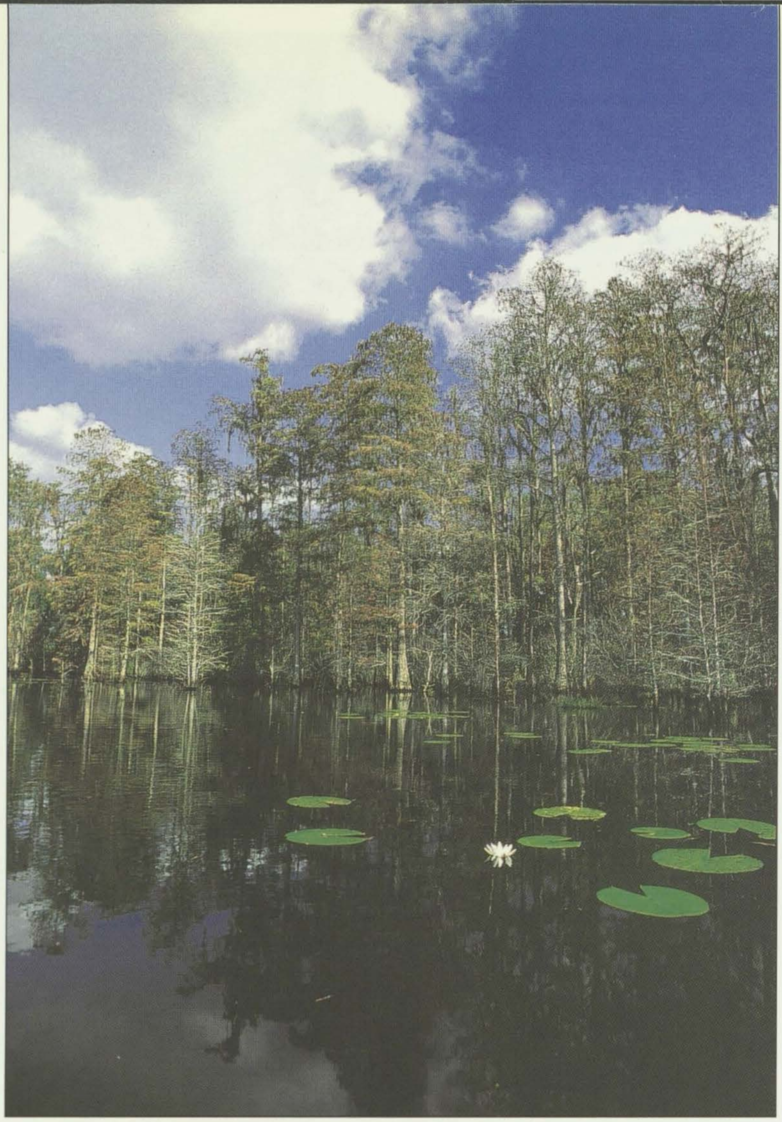
SECOND PLACE: SUNSET by Richard W. Halterman, Palm Beach

FLORIDA ENVIRONMENT

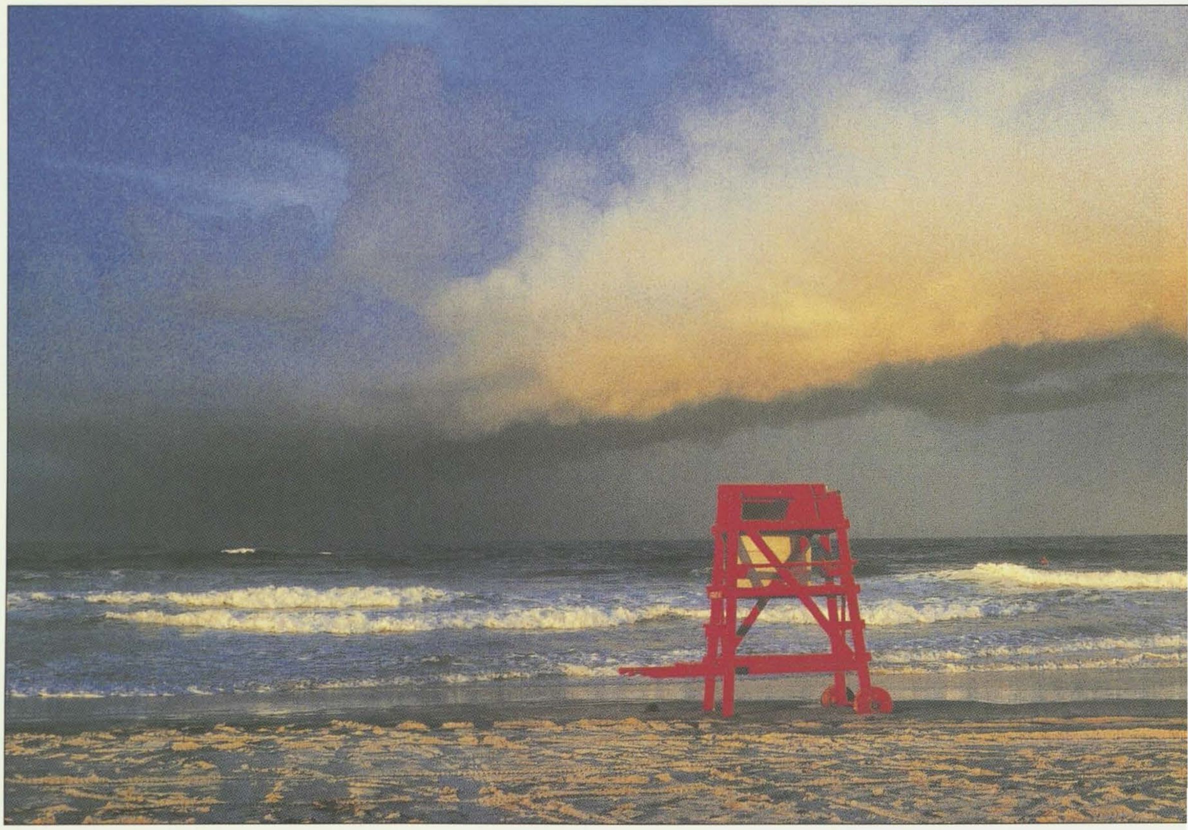
Florida Wildlife's 2000 Photo Contest

The *Florida Wildlife* 2000 photo contest deadline is June 16, 2000. For contest rules and entry form, contact Photo Contest, *Florida Wildlife*, 620 South Meridian Street, Tallahassee, FL 32399-1600; call (850) 488-5563; request a FAX at (850) 488-8974 or check the publications Internet site at **www.state.fl.us/fwc/**

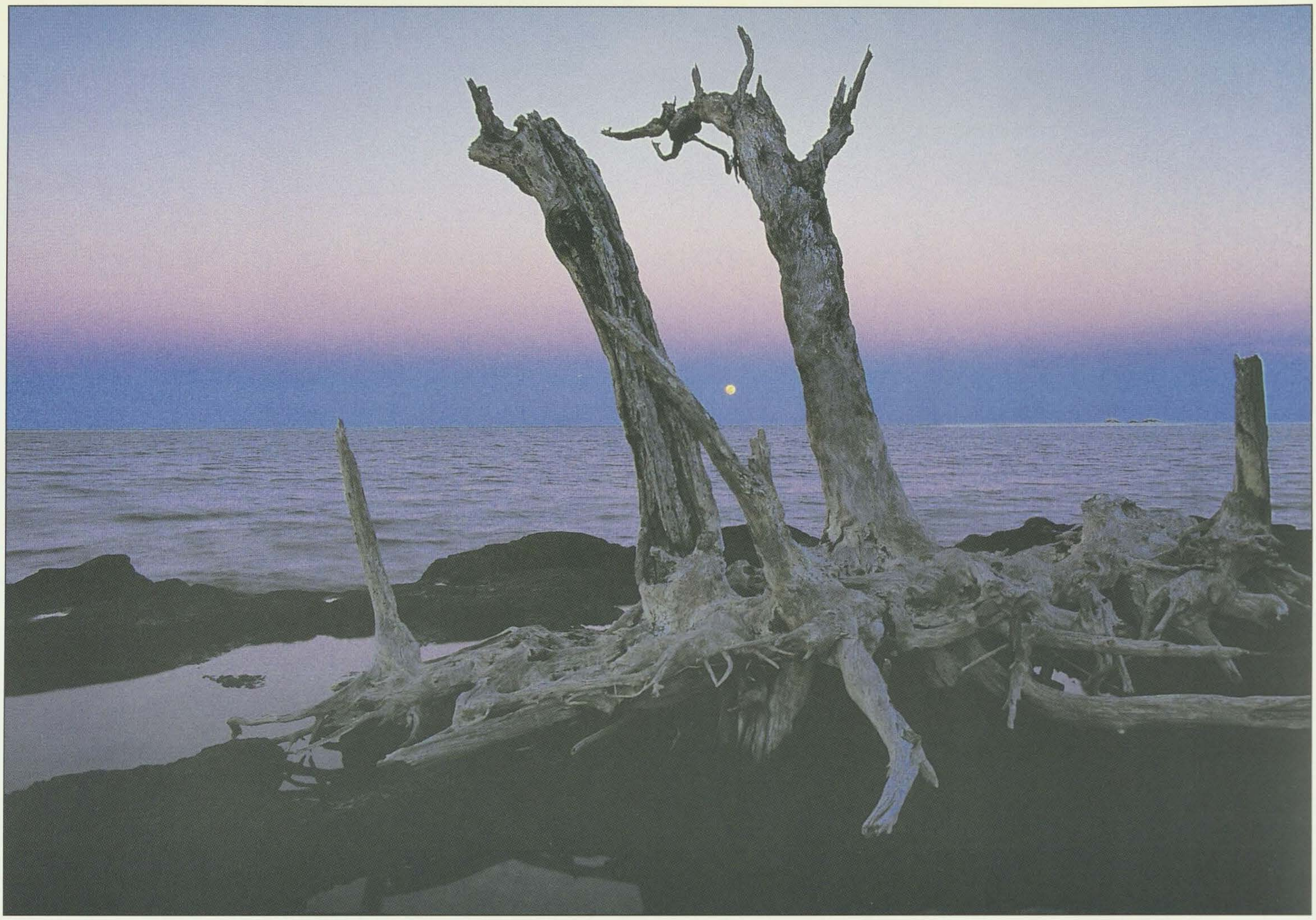




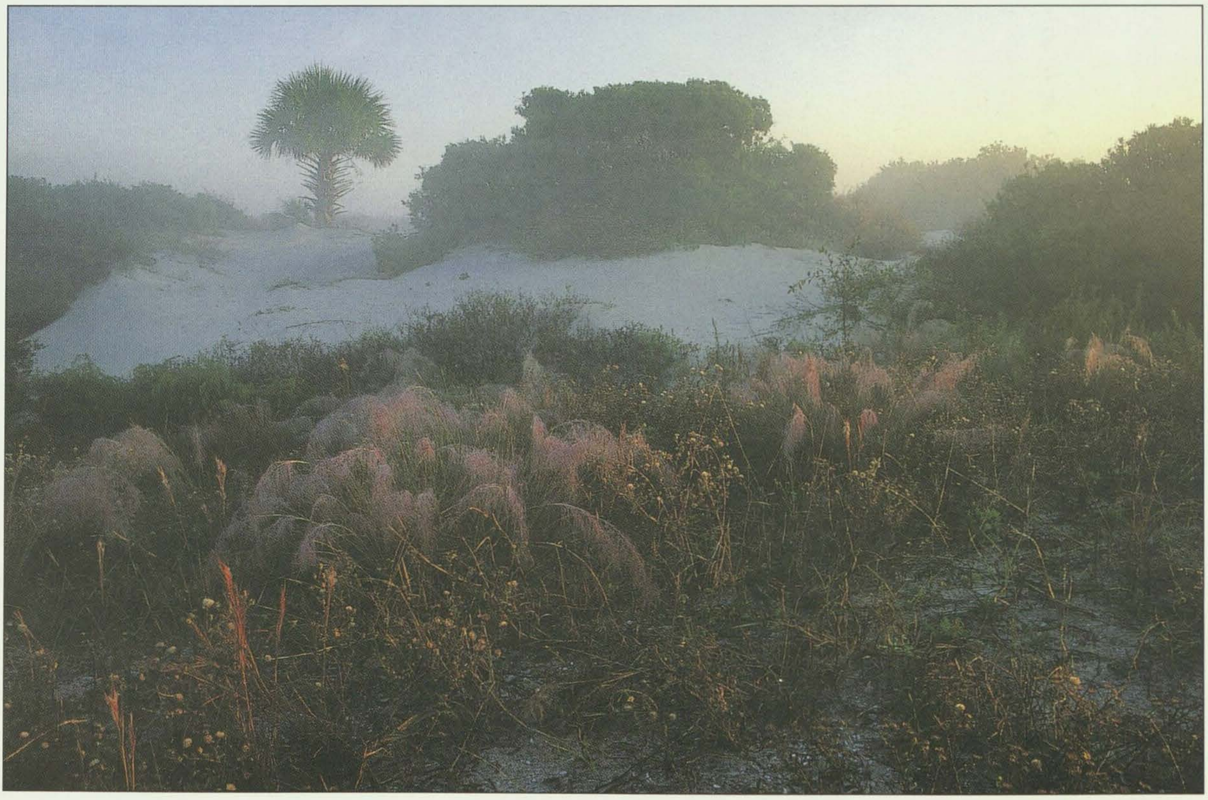
***HONORABLE MENTION**: CALM LAKE by Ed Lawlor, Port Richey (photo was also shown on the back cover of the November-December issue of* Florida Wildlife*)*



***HONORABLE MENTION**: STORMY BEACH by Tina Wright, Port Orange* ▷



***THIRD PLACE**: COASTLINE, BIG TALBOT ISLAND by Joseph Vogan, Jacksonville*



***HONORABLE MENTION**: DUNES, LITTLE TALBOT ISLAND by Michael C. Handcock, Land O'Lakes*

Wildlife Friend: Ron Swaim

By James Call

Todd Hopkins

Ronald Swaim (right) and Pat O'Donnell (left) have just hauled in a net of fish at Florida DEP Rookery Bay Reserve.

Ron Swaim learned about volunteering while serving in the U.S. Army. " We had a saying," he recalled with a laugh. "Don't volunteer for anything."

But that wasn't the lesson he took away from his experience in the Korean Conflict. About three years ago the former executive for an electronics manufacturer retired with his wife to Naples. Ron Swaim found himself miles from his Indiana hometown and with plenty of time on his hands.

"The Army did have a great influence on my life," he said. "It taught me if something needs doing to get it done. Not to waste life because it's too important."

So Swaim went searching around Collier County, looking for things that needed to get done. He eventually found the Rookery Bay National Estuarine Research Reserve. It quickly became apparent that the Rookery could make use of his varied talents, and he became a regular there. It's not unusual for him to put in 45 hours a week volunteering at the Rookery.

"His willingness to help out has earned him affectionate titles like computer guru, volunteer par excellence and swamp creature," said the Rookery's Diane L. Murray.

Swaim has served as a naturalist guide for fourth graders, assisted with research by seining and trawling for fish and collecting water quality data; worked to restore Keewaydin Island; implemented detailed accounting procedures for the Friends of Rookery Bay, a citizens support organization; helped maintain the computer system; painted and installed interpretive signs along trails; worked turtle nests surveys; attended a prescribed burn school and monitored wells.

"It's an all-around rewarding experience," Swaim said.

He appreciates the camaraderie he found among volunteers and the Reserve's staff. It's been a way to meet many people, and through the projects he has worked, he has discovered things about his community that he would never have known.

"I learn from others, from what they've done," he said. "And it feels good to be able to help out. I use my knowledge to give back something. It's a nice interchange."

Swaim had never worked with wildlife and nature preserves or had much interest in marine biology. After leaving the Army in 1963, he landed a maintenance job. He worked his way up to vice president before retiring. His expertise was in organizing and supervising people and tasks, not animals and viewing sites. Other than joining the Army at 15, he had never volunteered for anything, that is until he moved to Naples. It was something he didn't give much thought to or saw many opportunities for when he lived in Indiana.

"We look at things differently today," said Swaim."I'm not sure we were aware as a nation that retired persons can contribute more than what we used to think. There so many opportunities out there. So many organizations that can use people's help. Whatever time someone has, they can spend it in many ways and have a good time."

Lamar Williams
Master Turkey Call Maker

Text and Photographs by Jamie Adams

It takes unique gifts and abilities to be a world class custom turkey call maker. Lamar Williams has them. The third generation Florida Cracker has had a special affection for wild turkeys since early boyhood.

His first efforts at making turkey calls began in woodworking class in high school, back in the early 1960s. He continued working at it, training and fine tuning under the watchful eye of legendary Neil Cost of South Carolina, the foremost turkey call maker in the world. Today many experts in the field agree: a Lamar Williams turkey call is on the same level as a vintage call made by Cost.

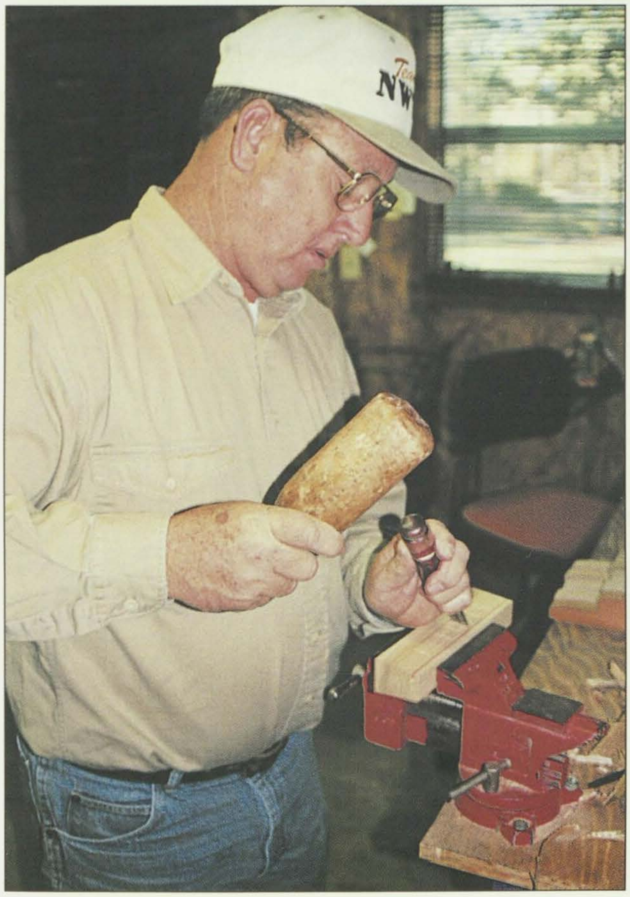
Adjacent to Williams' home in Starke is the small woodworking shop where he hand makes each of his calls. On the day of my visit, I watched as he patiently made the final finishing touches to one of his famous double-sided box calls. Although it sounded perfect, he was not satisfied with the tone and pitch he was getting from it. Williams removed a slight shaving of wood, and the call produced the special sound for which he was searching.

A perfectionist in a craft that requires time and painstaking labor, Williams is able to make a very limited number of calls a year. Each one recreates all of the natural vocalizations of a wild turkey and carries with it his personal guarantee that the buyer will be absolutely and completely satisfied with every aspect of the call or Williams will refund the purchase price.

His most popular item is the double-sided box call made from yellow poplar. Williams also makes a boat paddle turkey call. Both the double-sided and boat paddle are produced from a variety of woods. Williams works with cedar, black walnut, bald cypress and other

Williams works with cedar, walnut and cypress to make his signature turkey calls.

Williams will plane and chisel to get the right sound.



woods from trees native to Florida. He also has on hand exotic woods such as Honduran mahogany.

Dedicated to his craft, Williams said he will go through and check hundreds of pieces of cured lumber before selecting the few boards that meet his standards. You will not find a Lamar Williams call offered for sale at sporting good stores or in catalogs. He depends entirely on the reputation his calls have gained through satisfied customers. He is about a year behind in supplying back orders and his donation of turkey calls, auctioned off by wildlife conservation organizations, has raised thousands of dollars.

Although proud of the calls he makes, Williams doesn't know what to make of the popularity of his turkey calls among collectors.

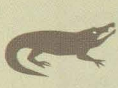
"They were made to hunt with," he remarked. "They were made to call in a good spring gobbler!"

Jamie Adams, a former wildlife officer, is the vice chairman of the Florida Fish and Wildlife Conservation Commission.

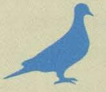
Lamar Williams shows his finished turkey call.

1998-1999 HUNTING ACCIDENTS

The number of hunting accidents in Florida last year dropped to 16, two less than the previous year and five fewer than in 1996-97. The following incidents where a person was injured with either a firearm or bow and arrow while hunting occurred between July 1, 1998, and June 30, 1999.



September 2, 1998, Polk County, *Alligator hunting*: Victim had harpooned an alligator and was loading his bang stick when it went off. The bullet struck him in the right index finger. A bang stick is a device on the end of a long shaft which holds a cartridge and is fired upon impact.
Never let the excitement of the hunt overrule safety and common sense.



November 14, 1998, Jackson County, *Dove hunting*: The victim and shooter were dove hunting in a mowed corn field, when the shooter shot at a some low-flying dove. The victim was sitting approximately 30 yards away and was struck with pellets in the face, eye and hand.
Never let the excitement of the hunt overrule safety and common sense.

November 15, 1998 Gulf County, *Squirrel hunting*: While squirrel hunting, the victim tripped and the muzzle of his firearm was plunged into the mud which created an obstruction. While trying to clear the obstruction, victim lost his eye.
When clearing a barrel of an obstruction, always unload the gun first.

November 19, 1998, Orange County, *Deer hunting*: Victim was resting the muzzle of his shotgun on his foot. When he grabbed the gun to leave, it discharged, taking off his third toe.
Never lean a loaded firearm against anything.

November 25, 1998, Gadsden County, *Quail hunting*: The victim attempted to retrieve a quail from behind a tree. The shooter shot at another bird that flushed. The victim was hit in the left shoulder and face.
A hunter is responsible for knowing the location of other members in the same hunting party at all times.

November 27, 1998, Calhoun County, *Deer hunting*: The shooter and victim both shot at a deer. The victim was hit in the buttocks.
Never fire in the direction of another human.

November 29, 1998, Liberty County, *Squirrel hunting*: As the victim adjusted his game bag, his pistol discharged and the bullet struck his right leg.
Always make sure your safety is on.

December 10, 1998, Marion County, *Deer hunting*: Shooter and victim were at opposite ends of a road. Dogs ran a deer between them and the shooter fired. The victim was hit in the right foot.
Always be aware of the position of other hunters in your group.

December 12, 1998, Levy County, *Deer hunting*: During a deer chase, victim changed location. Shooter shot at a deer, hitting the victim in the right thigh.
Never change your location without telling others in your hunting party.

December 13, 1998, Okaloosa County, *Deer hunting*: While deer hunting, a hunter shot at a deer about 125 yards away. After he fired he ran over to the deer and realized he had also shot a person. The 20-year-old victim died at the scene. He was struck in the right back side of the head and the bullet exited his left eye.
Always wear blaze orange, so other hunters don't mistake you for game.

December 20, 1998, Sumter County, *Deer hunting*: While walking through brush, shooter's gun became snagged on vegetation and discharged, hitting victim in the right foot.
Always point the muzzle in a safe direction: away from other people.

January 18, 1999, Wakulla County, *Duck hunting*: While hunting on a small pond, the shooter shot at a flight of ducks that had landed on the lake. The victim, sitting directly across the pond, was struck by two pellets, one under the left eye and the other in the right cheek.

January 19, 1999, Okaloosa County, *Deer hunting*: While the victim was attempting to uncock her rifle, it discharged. The bullet struck the ground and fragments of the bullet ricochet into her left leg.
Always point the muzzle in a safe direction: away from other people.

February 13, 1999, Escambia County, *Deer hunting*: While hunting deer from a hut, the shooter grabbed the gun. It discharged, hitting the victim in the calf.
Keep the safety on and the gun unloaded when not in use.

April 9, 1999, Walton County, *Turkey hunting*: A hunter heard yelping and shot at what he thought was a turkey. The victim was hit in the right side:
Always assume any noise is a person until you identify game.

April 14, 1999, Okaloosa County, *Turkey hunting*: The shooter shot at what he thought was a turkey 35 yards away. The victim was struck in the head and neck.
You must take the time to positively identify your target as game.

Florida law requires anyone born after June 1, 1975, to pass a state-approved hunting safety course before purchasing a hunting license. For registration, contact the FWC office nearest you. Phone numbers are listed on page 2.

– Information for this list is compiled by the FWC Hunter Education program.

Tom Evans

Color the Sea

By Dr. Karen A. Steidinger and Heather Melton Penta
Photographs courtesy of FMRI

As you walk down the beach, you feel a tickle in the back of your throat; you start to cough and your eyes begin to water. A few hundred yards away, you notice a front loader scooping up lots of dead fish. You ask the operator about the dead grouper, eels and snook. He replies, "Red tide."

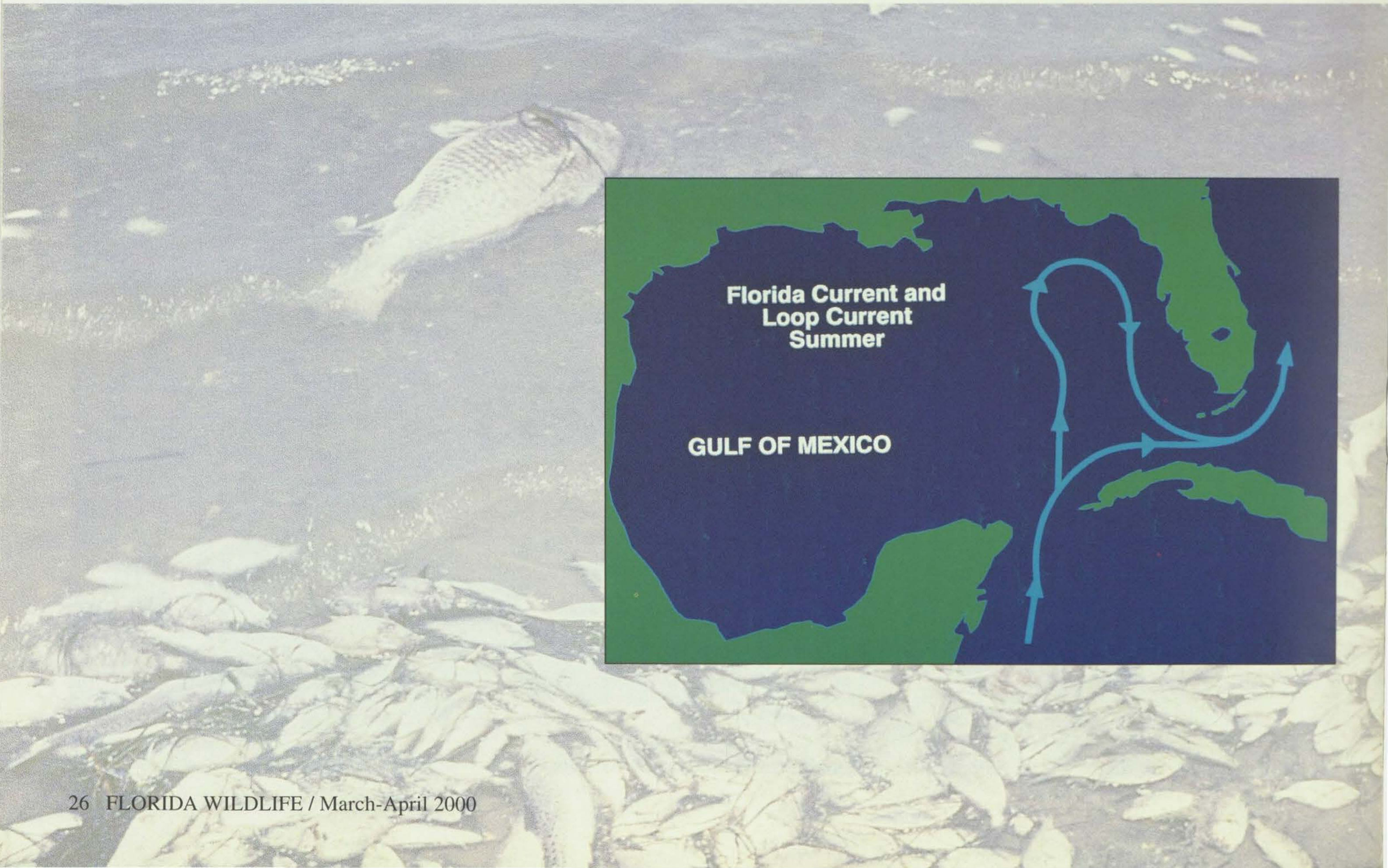
When Spanish explorers arrived in Florida in the early 1500s, Native Americans told them the seasons were heralded by the blooming of certain flowers and sometimes by dead fish. Later, in the mid 1800s, sailors and scientists charting Florida's coastline noted massive fish kills in the Tampa Bay region and elsewhere along Florida's West Coast. They connected these events with patches of "poisoned" water. In 1880, Florida residents associated seasonal fish kills with tainted oysters that made people sick – symptoms, which lasted a few days, included nausea, headaches and tingling fingers.

What is Red Tide?

It was red tide. Red tide occurs when certain tiny plant-like microorganisms, called microalgae, accumulate in high concentrations. When they erupt into a "bloom" (imagine weeds taking over a garden), they turn the water either red, brown, green or yellow.

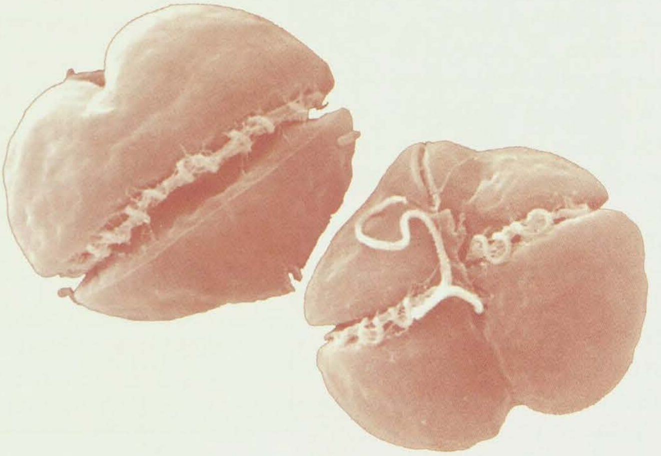
Ironically, red tide is not always red and has nothing to do with lunar tides. Scientists prefer to call it a harmful algal bloom (HAB). More than 40 HAB species live in Florida's marine environment; these species may be toxic to marine animals and humans. One species is most problematic. Red tide is Florida's most significant HAB because of duration, extent and impact to people and animals.

Gymnodinium breve (pronounced JIM-no-DIN-e-um BREV-e and frequently shortened to *G. breve*) is a microalgal species known as a dinoflagellate; it has two flagella, or whip-like tails, that help propel it through the water. They



Red

Seasonal fish kills and seafood poisoning are evidence of red tide.



that help propel it through the water. They are not great swimmers (don't think Olympics, these guys aren't even visible to the naked eye), but they can move up and down the water column and are carried by certain water masses, like the Florida Loop Current or the Gulf Stream.

G. breve red tides typically start 10 to 40 miles off Florida's West Coast. Since surface currents carry red tides, they can be transported away from the west coast of Florida. Blooms have been detected in the waters off Louisiana, Alabama and Mississippi in the Gulf, and off the Carolinas in the Atlantic. Furthermore, red tide outbreaks occur in all seasons and can be found every month of the year. Blooms can last for weeks, months, or even longer.

Why Do We Monitor Red Tide?

Red tide can irritate people's respiratory system, poison shellfish, kill marine animals and cause beach communities to lose money. Its brevetoxin is the culprit for human health and animal problems. Brevetoxin causes two major difficulties for humans: breathing problems and Neurotoxic Shellfish Poisoning (NSP). Sometimes the toxin becomes airborne and causes temporary respiratory aggravations like scratchy throats, coughing or watery eyes. This affects only those people on or near the beach. Wearing a surgical mask or staying in air conditioning usually takes care of the problem.

NSP is a direct result of eating contaminated shellfish (e.g., oysters, coquinas, clams and other bivalves). Because shellfish are filter feeders, the dinoflagellates concentrate in their guts. When humans eat the toxic shellfish, they can become ill; neither cooking nor freezing destroys the toxin. Shellfish harvesting areas are monitored for the presence of the red tide organism. Bivalve shellfish are monitored for toxins and harvesting areas are reopened when shellfish meats are safe for human consumption. Typically, it takes four to six weeks for the toxin to move through a shellfish's system and the reopening of a harvesting area.

The most obvious result of red tide is dead fish. Although slow-moving, territorial, or bottom-dwelling fish are the first to die in a red tide, nearly all fish are susceptible. The severity of the impact depends upon many factors, including length of exposure to the toxin. It usually affects the fish's ability to breathe (paralysis of the gills). Frequently, dead fish wash up onshore where they rot.

Marine mammals (e.g., manatees) and, birds are also susceptible to red tide ▷

Marine mammals (e.g. manatees) and birds are susceptible to the red tide toxins. In 1982 and 1996, red tide was linked to manatee deaths in the Gulf of Mexico.

linked to manatee deaths in the Gulf of Mexico. Brevetoxins can also affect cormorants and pelicans.

U.S. law requires Florida to have a biotoxin control plan that details a response in the event of an HAB. The plan is managed by the Florida Department of Agriculture and utilizes the expertise of scientists at the Florida Marine Research Institute (FMRI).

Research: How? Who? Prediction?

Among the many tools FMRI uses to monitor red tide are satellites. When they detect a high level of chlorophyll (the pigment that makes plants green) in the ocean's surface waters, a bloom might be present. Scientists will then travel to that location to sample the water. New sensors are being developed to test for the presence of red tide; the sensors will be attached to buoys located in the Gulf of Mexico. Since a bloom might cover many miles, the buoys will make monitoring easier and faster.

Scientists are working to create a computer model that will work like the weather forecast models and determine when and where red tide will make landfall. Red tide is not unique to Florida, it occurs all over the world and is caused by numerous species of microalgae.

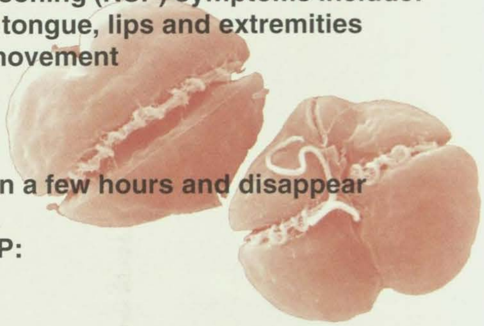
For further information on red tide, call the Education and Information Office (727) 896-8626.

Dr. Karen A. Steidinger and Heather Melton Penta study red tide for the Florida Marine Research Institute in St. Petersburg.

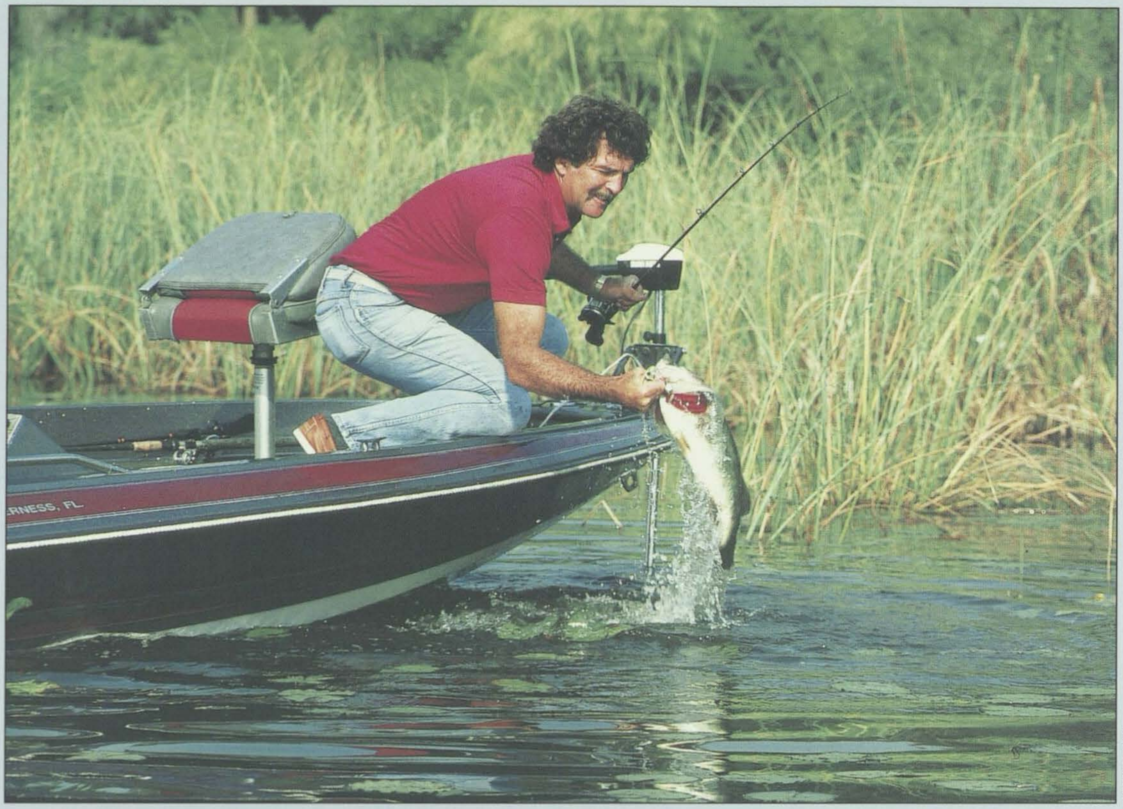
Facts about Florida's RED TIDE

To learn more, point your browser to: **http://www.fmri.usf.edu/redtide.htm** and **http://www.fmri.usf.edu/ecohab**.

- **The prefix dino- means "to whirl or to spin;" flagella means whip. Thus dinoflagellates are literally spinners with whip-like tails**
- **In 1964 a bloom off the Big Bend area covered 14,000 square miles**
- **In 1987 a *G. breve* bloom got into the Gulf Stream and traveled to the Carolinas**
- **In 1999 three simultaneous blooms occurred off Florida – the Northwest, the Southwest and in the Northeast**
- **The Neurotoxic Shellfish Poisoning (NSP) symptoms include:**
  - **Tingling and numbness of tongue, lips and extremities**
  - **Uncoordinated muscular movement**
  - **Blurred vision**
  - **Gastrointestinal distress**
  - **Dizziness**
- **NSP symptoms appear within a few hours and disappear within a few days**
- **Seafood associated with NSP:**
  - **Clams**
  - **Mussels**
  - **Oysters**
- **NSP cases have occurred in Florida and North Carolina and are usually associated with illegally harvested shellfish**



Dr. Karen A. Steidinger is a world-renowned red tide expert.



Tom Evans

THE ETHICAL ANGLER

1. Can identify most of the species in his or her area and knows the regulations for each

2. Understands the requirements for licenses and stamps

3. Appreciates the importance of habitat and a clean environment

4. Catches and releases fish in a manner that gives the fish a chance to survive

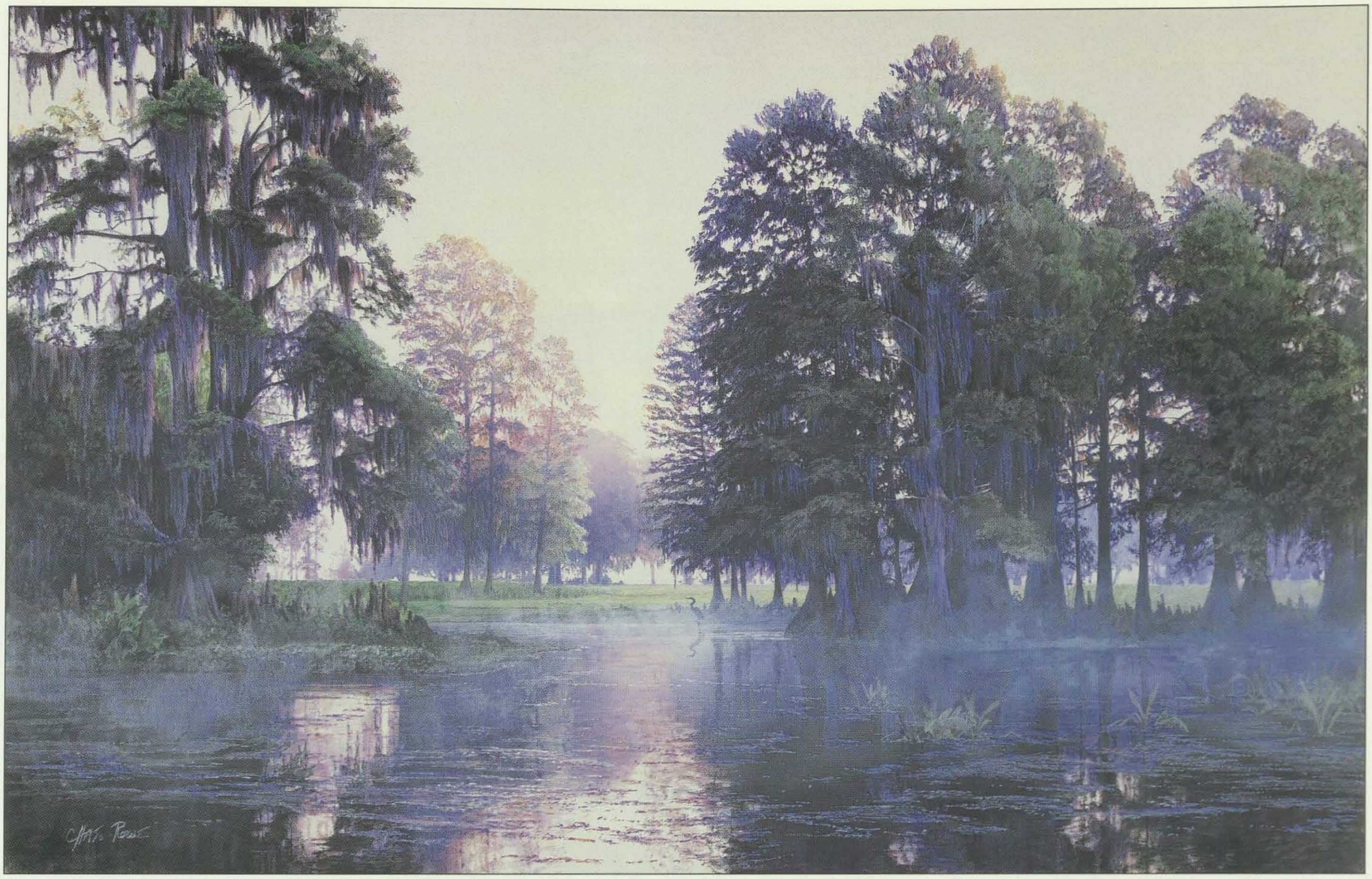
5. Is conscious of the boat's wake, does not speed past anchored boats, anglers on shore, swimmers and nonmotorized craft

6. Is courteous and does not move in on someone's fishing spot

7. Disposes fishing line, napkins, food containers and other waste in a proper receptacle

8. Shares ethics and expertise

9. Abides by the law and reports those who do not



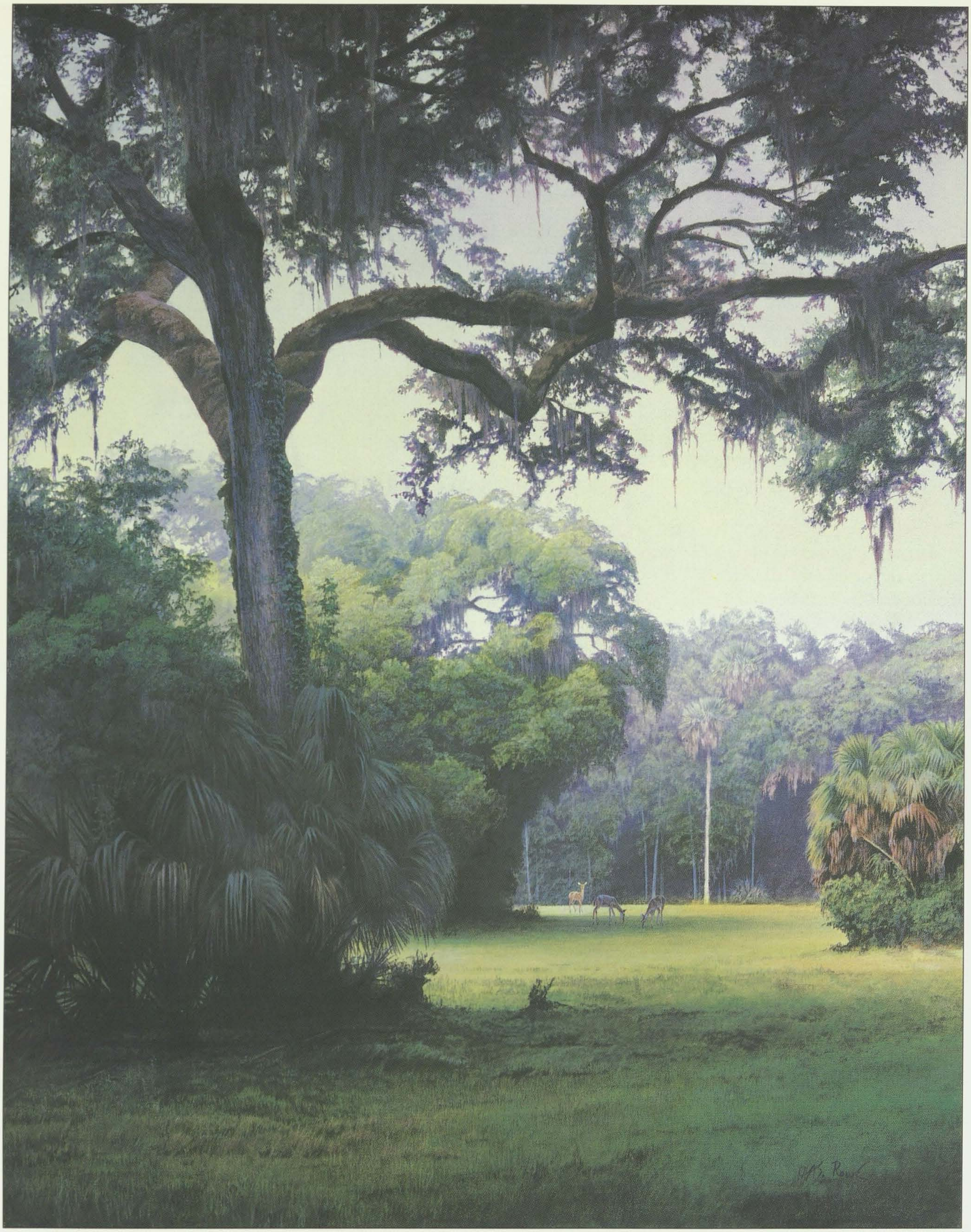
Cypress Edge - Heron

Prints by Charles Rowe

The Wildlife Foundation of Florida, Inc., a not-for-profit foundation, is proud to offer Florida wildlife artist Charles Rowe's *Cypress Edge – Heron* (above) and *Pastoral* (opposite page) prints.

The egg tempera painting *Cypress Edge – Heron* captures the beauty of the Withlacoochee River. There are 300 limited signed and numbered prints on neutral pH paper using colorfast inks with an image size of 12" x 18". *Cypress Edge – Heron* cost $70 plus $7 shipping. Florida residents add $4.90 sales tax.

Each print order benefits the *Florida Wildlife* magazine manuscript, art and photography fund. Send check or money order to the Wildlife Foundation of Florida, Inc., Charles Rowe Prints, PO Box 11010, Tallahassee, FL 32302. Prints are shipped shrink-wrapped in a flat container via UPS. Only one shipping fee is charged for multi-print orders sent to the same address. The $7 shipping fee is for U.S. addresses only. There's an additional charge for orders sent outside the United States.



Pastoral

Three deer grazing under a large live oak are the subject of *Pastoral.* The 20" x 26" signed and numbered print is limited to 475. *Pastoral* is printed on neutral pH paper with colorfast inks. The costs is $120 plus $7 shipping, Florida residents add $8.40 sales tax.

CONSERVATION UPDATE

Compiled by James Call

MANATEES + BOATS = DEATHS

Manatee deaths set a record in 1999, totaling 268. FWC biologists report 82 of those deaths were boat-related, up from 66 in 1998. The highest number of deaths occurred in Brevard County, where 44 manatees died. Officials say 12 of those deaths involved a collision with a boat.

If you see a sick, injured or orphaned manatee, call the Florida Marine patrol at 1-800-DIAL-FMP.

PETS AND CAMPGROUNDS

Florida now allows pets in the majority of state park campgrounds. The rule change came after a one-year test at five parks. A survey indicated that about 70 percent of respondents supported allowing pets in the campground. At the time of campsite registration, pet owners are required to show proof of rabies vaccination and pay a $2 per night pet fee for each animal. The rule change is in place at 32 of the 46 Florida state parks with campgrounds. Call (850) 488-3300 for a list of campgrounds where Fido is welcomed.

FWC

NUISANCE ANIMALS? WEB TO THE RESCUE

A new web site may help you deal with nuisance wildlife. Point your browser to **www.wld.fwc.state.fl.us/critters** and learn about the habits and histories of wild animals native to Florida. The site includes information from the *Wildlife Resources Handbook*, a cooperative effort of the FWC, the Florida Cooperative Extension Service and the Institute of Food and Agricultural Sciences at the University of Florida. It also provides links to relevant information at public and commercial sites.

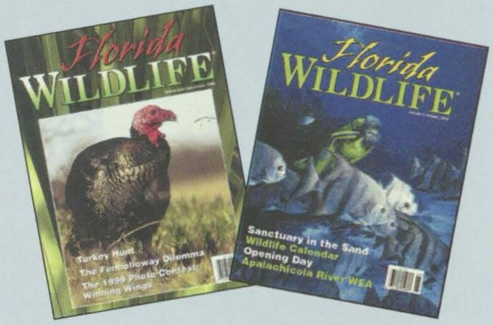
BASS TOURNAMENT

The Central Florida Chapter of Paralyzed Veterans of America (PVA) is hosting a bass tournament in Sanford, April 7-9. Teams of two, one of the anglers must be disabled, will compete for a first prize of $5,000. Entry deadline is March 24. Call the PVA at 800-940-2378 for more information.

zebra longwing by Rita Venable

NORTH AMERICAN BUTTERFLY ASSOCIATION TO MEET

The North American Butterfly Association members will meet May 18-21 at Palm Beach Gardens. Field trips for beginners as well seasoned butterfliers are planned for the Loxahatchee National Wildlife Refuge, Dupuis Reserve and Everglades National Park. The meeting is open to to the public. For information and registration, contact Kathy Malone or Alana Edwards, 3206 Palm Drive, Delray Beach, FL 33483 or call (561) 706-6732.



FLORIDA WILDLIFE IS NOW AVAILABLE AT THE FOLLOWING LOCATIONS:

Homossassa Springs State Park: Gift Shop
Miami: Joe's News, Inc.
Sanibel Island: Bailey's Supermarket, Macintosh Book Shop
Sarasota: Mote Marine Laboratory
St. Marks National Wildlife Refuge: Visitor Center
Tampa: Lowery Park Zoo; Tampa Electric Manatee Center
Tallahassee: Black Cat News, Books-A-Million, Borders Books, Museum of Florida History, Native Nurseries, Tallahassee Museum of Natural History
Vero Beach: Vero Beach Book Center
Wakulla Springs: State Park Lodge

Contact Mary Beth Savage at (850) 488-9477 for *Florida Wildlife* distribution opportunities.

OUTDOORS WOMAN DATES

Four Becoming an Outdoors Woman workshops are scheduled for the year 2000. The workshops teach skills for hunting, fishing, camping, backpacking, photography and more. They are designed for women wanting to get outdoors and are limited to 100 participants. The remaining dates are: April 14-16 and Sept. 8-10 in Ocala and Nov. 17-19 in West Palm Beach. Call Lt. Lynne Hawk at (561) 625-5126 for more information.

NEW WMA

At a February meeting, the Florida Fish and Wildlife Conservation Commission voted to create the Fisheating Creek Wildlife Management Area. The 18,272-acre site is in Glades County. For more information about special-opportunity hunts, hunting seasons and other public use of the area, call the FWC South Florida district office (941) 648-3203. Commissioners also agreed to increase the vessel limit for black mullet from 50 fish to 100 fish daily if two or more licensed persons are aboard. The rule goes into effect March 30.

Ulf Eweman

RULES FOR TORTOISES

The FWC now requires a permit for the importation of leopard tortoises and African spurred tortoises. These tortoises can carry ticks, which leads to heartwater disease, fatal to deer. For more information about the requirement call (850) 488-8843.

Photo courtesy of the California Turtle and Tortoise Club: ***http://www.tortoise.org/cttc/website.html*****.**

Florida WILDLIFE®

COMING IN MAY-JUNE

- **Florida Butterflies**
- **Mangroves Are Special**
- **Florida's Non-venomous Snakes**

Ask The Lieutenant

Lieutenant, I need some enlightenment about the Holmes Creek Type II area in the Northwest Florida Water Management District. Is it possible to hunt from horseback there?

– Range Rider

RR, Many of my friends have asked about this. Of course it is possible. The question is, is it legal? Yes it is. There is no prohibition on using or hunting off horseback on the Northwest Florida Water Management District property at Holmes Creek. I would strongly urge you to use caution if you do so during deer season. Also, you should wear at least 500 square inches of hunter orange when hunting. I'd make sure the horse had hunter orange on as well.

– Lt.

Hi Lieutenant, I like to hunt at the Champion International Management Area in Escambia County. Somebody told me that next year there are plans to charge $140 to hunt there and to limit the area to just 350 people. Is this true? Can you fill me in on details? When would one apply? Will I need a Management Stamp?

– Pensacola Pete

Hello Pete. So many questions and so little space. The FWC has been discussing with Champion about the possible switch of its WMA to a "User Pay" format. Under "user pay," a private landowner of property in the Type 1 system can opt for this program where X number of permits to hunt the land are sold at a higher price. In essence, the FWC is brokering a hunting lease that prices the permits far below what the landowner could get on the open market.

The Champion WMA is scheduled to become user pay this June. The plan is to offer 325 permits at $140. We will advertise when the application process begins.

This past season the St. Joe Timberland Co. put the Moore's Pasture WMA in Bay County into user pay. The FWC sold more than 300 permits at $99 each. In fact, we're still selling permits on an almost daily basis. It's a popular program. The Flint Rock Wildlife Management area, which is the old Aucilla still hunt area, will also become part of the program later this year. Other properties managed under the user pay format includes Nassau, where permits cost $96.25, Miami Corporation, $125 and San Pedro Bay with permits at $225.

– Lt.

Back by Popular Demand

We had such a tremendous response to our exclusive *Largemouth Bass* print by artist Duane Raver we decided to make it available one more time. The image measures 11" x 17".

For every two one-year ($24) new, renewal or gift subscriptions (plus $2 shipping & handling) you purchase, we'll mail you this print – absolutely FREE. Each of these stunning prints is signed and numbered by the artist.

All orders must be prepaid: make check or money order payable to *Florida Wildlife*. Send to Circulation Office, P. O. Box 6150, Tallahassee, FL 32314-6150. Supplies are limited. Allow 6-8 weeks for delivery.

Your Name ______________________
Address ______________________
City ______________________
State __________ Zip ______________
Phone (   ) ______________________
( ) 1 Year $12   ( ) New   ( ) Renewal

Gift #1

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City ______________________
State __________ Zip ______________
( ) 1 year $12   ( ) New   ( ) Renewal

Gift #2

Name ______________________
Address ______________________
City ______________________
State __________ Zip ______________
( ) 1 year $12   ( ) New   ( ) Renewal

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